

Economic Principles

Frank A. Fetter

ECONOMICS

IN TWO VOLUMES

VOLUME I

ECONOMIC PRINCIPLES

MODERN ECONOMIC PROBLEMS

By

FRANK A. FETTER

This text makes practical application of the theories treated in "Principles of Economics" to such matters as money, banking, international trade, labor organizations, agricultural economics, trusts, taxation, insurance, immigration, and similar topics. The book was completely revised in 1922; hence it considers economic matters in the light of the changed conditions following the World War. The volume is equipped with charts, diagrams, statistical tables, reference reading lists, and other numerous helps for both the teacher and the student.

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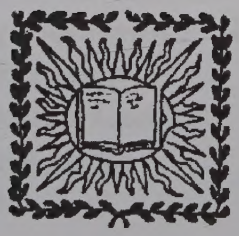
Economics—Volume 1

ECONOMIC PRINCIPLES

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FOREWORD

The author's "Principles of Economics" published in 1904 aimed to present a unified theory of distribution under the conditions of the modern price system. Value, rent, wages, and interest were for the first time in a general text treated as different manifestations of the same general principles, not as contrasted phenomena each governed by a law of a different nature. The present text develops this plan further and seeks to bring out more clearly on the theoretical side important distinctions such as those between the individual psychology of value and market price, static and dynamic conditions, temporary and more permanent changes, commercial and welfare problems.

This text of "Economic Principles" seeks to answer the practical needs of our society as it is today better than does the older analysis which has become conventionalized in college texts. Illustrations of principles are drawn almost entirely from contemporary American conditions. A number of practical applications of the principles are treated in a second volume "Modern Economic Problems" (revised 1922), dealing with the facts, theories, and public policies relating to money, banking, international trade, labor organizations, agricultural economics, trusts, taxation, insurance, and other topics.

ECONOMIC PRINCIPLES

PART I

ELEMENTS OF VALUE AND PRICE

ECONOMIC PRINCIPLES

CHAPTER 1

PURPOSE AND NATURE OF ECONOMICS

§ 1. Definition of economics. § 2. Economics contrasted with the natural sciences. § 3. Science as abstraction. § 4. Science and art. § 5. Place of economics among the sciences. § 6. Subdivisions of economics. § 7. Economy in the sense of the subject studied. § 8. Economy not parsimony. § 9. Social aims of economics. § 10. Economics in a democracy. Note on Economic laws and other terms.

§ 1. **Definition of economics.** Economics may be defined, briefly, as the study of men earning a living; or, more fully, as the study of the material world and of the activities and mutual relations of men so far as all these are the objective conditions to the gratification and to the welfare of men. The ideas of most persons on this subject are vague, yet it would be very desirable if the student could approach this study with an exact understanding of the nature of the questions with which it deals. Until a subject has been studied, however, a definition in mere words but slightly aids in marking it off clearly in our thought. The student must first try to see the general field of facts and of human interests that economics covers.

§ 2. **Economics contrasted with the natural sciences.** Economics may be contrasted with the natural sciences, which deal with material things and their mutual relations. A definition that suggests clear and familiar thoughts to the student seems at first much more difficult to get in economics than in the natural sciences. These deal with concrete, material things

which we are accustomed to see, handle, and measure. If a child is told that botany is a study in which he may learn about flowers, trees, and plants, the answer is fairly satisfying, for he at once thinks of many things of that kind. When, in like manner, zoölogy is defined as the study of animals, or geology as the study of rocks and the earth, the words call up memories of many familiar objects. Even so difficult and foreign-looking a word as ichthyology seems to be made clear by the statement that it is the name of the study in which one learns about fish. It is true that there may be some misunderstanding as to the way in which these subjects are studied, for botany is not in the main to teach how to cultivate plants in the garden, nor ichthyology how to catch fish or to propagate them in a pond. But the main purpose of these studies is easily made clear at the outset; it is to know about the natural objects themselves. It is true that as each science is pursued, and knowledge widens to take in the manifold and various forms of life, the boundaries of the special sciences become not more but less sharp and definite.

In contrast with these, economics is one of the social sciences which deal with the inner nature of men and with men's relations in society. These are less tangible facts—we are tempted to say that they are less familiar—than are the materials with which the natural sciences deal. But the truth may be that social acts and relations are more familiar to our thought than is the subject matter of the physical sciences. Every hour in the streets and stores one may witness thousands of acts, such as bargains, labor, and payments, that are the data of economic science. Their very familiarity causes us to overlook their deeper meaning.

§ 3. **Science as abstraction.** A science by its very nature as science is concerned primarily with abstractions rather than with concrete objects. To think scientifically is to think abstractly. Abstraction is a certain way of looking at things; it is looking at their qualities. It is more difficult to think abstractly than it is to think of concrete things. It implies

an analysis, a taking-apart of things to get at their components, and a grouping of these parts into some general idea—not an easy task for most minds. Economics singles out for study those aspects of the world which have to do with man's desire for the things about him and the use that he makes of them.

Economics "as the study of the material world" also has to do with all of those things which are the subject-matter of the natural sciences; but only in a secondary way. It studies them only as they are related to man's welfare, or as they affect his valuation of things; only in so far as they are related to the central subject of economic interest, the earning of a living.

§ 4. **Science and art.** Like every other field of study, economics has two aspects, one of science, the other of art; the one of knowledge, the other of action; the one of principles, the other of their application. Each science seeks to study and to understand the world in some aspect, to reduce the multitude of facts to order, and to understand their relations. Thus, astronomy has succeeded in counting a large number of heavenly bodies, classifying them as stars, planets, comets, etc., has come to understand their relations in space, distances, direction, and speed of movement, etc. On this science is based such practical arts as navigation, regulation of the calendar, determination of the exact time, prediction of eclipses, etc. Thus, likewise, physics, chemistry, the various branches of biology, psychology, etc., are concerned first, and merely as science, with the truth regardless of its application. Then, however, whatever truth is discovered may be found to be capable of some uses or applications, either in the hands of the scientists themselves or in the hands of another body of men, variously named practical workers, technicians, and inventors, who develop the art side of the subject. The history of civilization abounds with evidence showing that the work of the group of scientific workers continually pursuing truth for its own sake (work little esteemed by the world in general), is indispensable for the continued progress in the

practical arts. Just outside the circle of attained scientific knowledge is a fringe of possible practical applications. But unless other and still other discoveries were made, practical progress in the arts would lose its source of inspiration.

§ 5. **Place of economics among the sciences.** Economics seeks the reason, connection, and relations in the great multitude of acts arising out of the dependence of men on the world of things and of other men. Economics has to study men in two sets of relations, as is indicated in the definition: the relation on the one hand of man to material (non-human) things about him, and on the other hand to other men with whom he has "economic" dealings. In so far as economics is concerned with the former, the relation of man to his material environment, economics borders on some phases of each of the engineering sciences, and of the natural sciences, as geology, botany, zoölogy, and (in considering how these things affect man) physiology and psychology.

In so far as economics is concerned with the mutual relations of men in business, it becomes one of the group of social sciences. The word "social" comes from the Latin *socius*, meaning a fellow, comrade, companion, associate. The social sciences deal with men and their relations with each other. As men living together have to do with each other in a great many different ways, and enter into a great many different relations, there arise many different social problems, and the several social sciences of politics, law, ethics, and economics. Each of these attempts to study social relations in some one important aspect, that is, to view them from some one standpoint. Politics treats of the form and working of government, and is mainly concerned with the question of power or control of the individual's actions and liberty. Law treats of the rules of the sovereign state controlling the actions of men (criminal jurisprudence), and of the principles guiding the interpreting of the contracts into which men see fit to enter in their economic affairs (civil jurisprudence). Ethics treats the question of right and wrong, and the moral aspects of

men's acts and relations with each other. As compared with these, economics is a much less purely social science; it has to do almost constantly with the material environment as well as with the social environment in which men live.

The attempt to distinguish between the fields occupied by the various social sciences discloses at once a fundamental unity existing among them. The acts of men are closely related in their lives, but they may be looked at from different sides. The central thought in economics in its social aspect is the business relation, the relation of men in working together, or in exchanging their services and material goods. In pursuing economic inquiries we come into contact with political, legal, and ethical considerations, all of which must be recognized before a final, practical answer can be given to any question. Nevertheless, the province of economics is limited. It is because of the feebleness of our mental power that we divide and subdivide these complex questions and try to answer certain parts before we seek to answer the whole. Whoever attempts this final and more difficult task should rise to the standpoint of the social philosopher.

§ 6. **Subdivisions of economics.** Economics in its most general sense includes various subdivisions. First is domestic economics (household economics), the modern equivalent of *oiko-nomos,* first used by Xenophon as the name for a set of rules to help the housekeeper or steward of an estate. The typical Greek household, however, was a large estate with slaves, almost a little state in itself, carrying on nearly all the arts and crafts. The term political economy (as *économie politique*) was first used in France in the eighteenth century to express the set of rules or principles to guide the king and his counselors in the control of his country, which was thought of much as if it were the king's private estate. Of late the term "economics," as expressing better a broadening conception of the subject, and at the same time as less likely to be confused with politics, has been gradually displacing the term political economy. It is used with various adjectives in-

dicating the field covered; for example, domestic economics, household economics, corporation economics, national economics, political economy, world-economy, etc.

§ 7. **Economy in the sense of the subject studied.** We have chosen for our purpose to define economics as a "study," a body of knowledge, a science. But as in the case of various other sciences, its name is used also to indicate the body of facts and group of persons which are studied. One person (like Robinson Crusoe, on his desert island) constitutes an individual economy. There are, in such a case, no personal relations to study, but only the relations of man to his environment. A group of persons thought of together with all their material environment and in their relations with each other, forming something of an economic unity, constitute a social economy. The economic affairs of a family constitute a family or domestic economy, and those of a nation a political, or a national, economy.

§ 8. **Economy not parsimony.** It should hardly be necessary to warn against giving to the word "economy" the meaning of (the act or the quality of) parsimony. Economy implies good management, making the best of whatever means one has, and this is not stinginess, tho the thriftless and the self-seeking are always prone to impute it as such to others. Economy as a mode of action is parallel to *economics* as the science that seeks to arrive at such general rules and principles as will lead to the best results in the use of the resources and services of individuals, families, and nations.

It is true that there are different standards by which to judge what is "best"; sometimes a merely pecuniary standard of business profit to the individual is taken, and this may come close to mere avarice. Again, a standard of true welfare for the nation or for the race may be taken. These two views may be, and often are, in conflict, and it is a part of the task in this study to keep before the mind as clearly as possible the difference between these standards. The one standard is that of individual—pecuniary, acquisitive eco-

nomics; the other that of public—industrial, productive economics.[1]

§ 9. **Social aims of economics.** Economics is often defined as the science of wealth. Partly because of this, and partly because of the unfortunate confusion of the individual and of the social points of view, it has been characterized as a "gospel of Mammon." But, in the main, economics must be understood as a social study for social ends, not a selfish study for individual advantage. The individual interest must be recognized, but treated as within, and subordinate to, the larger social interests. Certainly some of the lessons of economics may be of practical value to men in active business, and training in economics is increasingly deemed a helpful preparation for many special callings. Many economic "principles" are but the general statement of those ideas that have been approved by the experience of business men, of statesmen, and of the masses of men. Economics is not dreamed out by the closet philosopher, but more and more it is the attempt to describe and comprehend the interests and the action of the practical world in which men must live. Many men are working together to develop this study—those who collect statistics and facts bearing on all kinds of practical affairs, and those who search through the records of the past for illustrations of experiments and experiences that may help us in our life to-day.

§ 10. **Economics in a democracy.** With the growth of the modern state, with the increasing importance of business, and of industrial and commercial interests, as compared with changes of dynasty or the personal rivalries of rulers, economic questions have grown in relative importance. In our own country, particularly since the subjects of slavery and of states' rights ceased to absorb the attention of our people, economic questions have pushed rapidly into the foreground. Indeed, it has of late been more clearly seen that many of the older political questions, such as the American Revolution and

[1] This distinction is developed in Part VI, especially in ch. 39.

slavery, formerly discussed almost entirely in their political and constitutional aspects, were at bottom largely questions of economic rivalry and of economic welfare. The remarkable increase in the attention given to this study in colleges and universities since the beginning of the last quarter of the nineteenth century is but the index of the greatly increased interest and attention given to it by citizens generally.

The conception of political economy as the term was first used, has been modified wherever unlimited monarchy has given way to the rule of the people. In a democracy there is need for a general diffusion of knowledge, if the economic policy and legislation of the State is to be intelligent. The power now rests not with the king and a few counselors, but in the last resort with the people, and therefore the people must be acquainted with the experiences of the past, must so far as possible have economic knowledge to enlighten them in their choice of men and of measures.

NOTE

Economic laws and other terms. In the science of economics some general ideas and statements are attained, and are called variously laws, principles, theories, hypotheses, and doctrines. These terms are used somewhat loosely, and we may note the general meaning that we are to attach to them.

Law originally meant (1) the binding custom or practice of a community; then came to mean (2) a rule laid down and enforced by some authority, as the State (acting through the political law-making body), or as divine will; (3) a statement of an order or relation of phenomena which appears to hold under the given conditions. Economic laws have this last meaning; they are not made and enforced by man, but are discovered as the true order inherent in things. Often in the physical sciences law in this sense suggests a pretty definite arithmetic statement (i.e., Newton's law of gravitation, Kepler's law, etc.), but it is used generally of an orderly recurrence. In economics the term is frequently applied, as in the phrases, law of diminishing returns, Gresham's law of money, etc.

Principle meant (1) beginning; then (2) source, or origin; (3) a fundamental truth; (4) an elementary proposition. Law and principle are used almost interchangeably, tho it would seem better to

speak of principle when a more elementary statement is meant, and a law when the statement is more complex. Throughout this book the preference is generally given to the word principle rather than law in cases where there is good usage favorable to both.

Theory meant (1) contemplation; then (2) the general explanation of a body of facts, or group of phenomena; in other words, a plan or scheme of thought constructed to fit the facts so far as they are known. The popular use of the term theory to mean some plan of action, especially a poorly thought out plan sure to fail, should have no place in our discussion. It is an error to contrast theory and practice as the impracticable versus the practical. They should be contrasted only as idea, or explanation, versus action, or execution. Good theory then, usually goes with good practice and bad theory with poor practice. Usually when it is said that a thing is true in theory but false in practice, what is meant is that the theory is *untrue*, based on purely imaginary conditions and hence will not work. Science has to do with theory; art has to do with practice.

Hypothesis, often used interchangeably with theory, may be distinguished from it; it is a provisional conjecture regarding the relations of certain phenomena, whereas a theory is a hypothesis which has undergone a large measure of verification.

Doctrine meant originally (1) that which is taught, usually by a group of thinkers; hence (2 a body of principles. In such expressions as the law of rent, the theory of rent, and the doctrine of rent, the terms are well nigh synonymous, and the preference for the use of "doctrine" in certain cases rather than theory or principle, resulted more or less from the historical accident that a theory became connected in thought with a group of thinkers (that is, was taught by them, as Malthusian doctrine, the Ricardian rent doctrine, the free-trade doctrine of the Manchester School, etc.).

CHAPTER 2

CHOICE AND VALUE

§ 1. Choice; its origin. § 2. Development of conscious choice. § 3. The idea of scarcity. § 4. Valuation. § 5. One's own labor as a valuation unit. § 6. Crusoe's scale of valuations. § 7. Choice before and after valuation. § 8. Value. Notes on Aspects of things chosen, Various meanings of scarcity, Value and valuations.

§ 1. **Choice; its origin.** The world of industry, as we look out upon it, appears to be alive with motion, like a beehive. In the crowded harbor, the busy railroad yard, the noisy steel mill, the bustling department store, we see a ceaseless and bewildering activity. In all this movement and apparent confusion, there is, however, a large degree of order and a pretty regular succession of events which reflects a succession of choices that men are making.

These choices are not always and entirely the result of deliberate and conscious calculation. They are determined in a very great degree by habit or by instinct. Every living creature has a nervous organization of some sort—plants as well as the lowest forms of animals. This nervous organization has a pretty definite "set" or habit of response toward its environment; that is, the nerves react in certain ways to external stimuli. The seed in moist soil germinates; it sends rootlets into the earth in search of water and of the particular soil-elements which it by nature "chooses"; it sends stock and leaf upward into the light and air, it spreads or climbs or twines according to its nature. The chick picks its way out of the shell, and then instinctively (by its inborn nature) picks at any particle it sees. It finds some objects "good" and it eats them; it finds others "bad" and it rejects

them. It thus adds to its instinctive choice the choice resulting from experience.

§ 2. **Development of conscious choice.** Every human being starts on his life of choice in just this way, with a fund of natural impulses, a capacity for certain instinctive reactions. The new-born child cries when hungry or uncomfortable, and it does not know in advance (the first time) what it is crying for. It is moved by mere impulse, tho we say loosely that it "knows" well enough when it gets the right thing. Some food it rejects, other food it takes; and its mere impulse has now become a vague aversion or a vague desire. Very quickly it learns to associate the presence of some object with this or with that choice, and reaches for it, cries for it, giving now a very definite direction to the impulse which it feels. Feeling directed in this way upon some particular object or action is called desire. If we speak of this as a "conscious desire," we mean not that the person is reflecting on the nature of the desire, but simply that he is conscious of the presence of the thing, and that he desires it. As the child grows older, choice becomes vastly more complex, but all human choice is the development of the first simple impulsive acts. The difference in this matter between man and the animals lies in the degree to which the original fund of impulses is strengthened or weakened by experience and training, and is modified by the greater growth of forethought, imagination, and reason. As the man attains his maturity, deliberate calculation enters more and more into the making of choice. Yet the instinctive and habitual elements of choice continue to be very potent.

Tastes change with age, are trained, are influenced by custom, by example, and by suggestions of many kinds, and are given a wider range by wealth, travel, and opportunity. But choice is ruled fundamentally by impulse and by instinct; one likes what he likes; *de gustibus non disputandum est.*

Choice develops in this way as it is directed upon each of the great classes of things with which man is surrounded;

clothing, houses, furniture, horses, automobiles, books, etc. It operates also upon the actions of the man himself. He reaches out or withdraws his hand; he seeks or he shuns; he labors to make or to destroy, to possess or to get rid of. Thus the choice among one's own acts is intertwined with one's choice of things.[1]

§ 3. **The idea of scarcity.** Now we are not likely to feel a very keen desire for a particular thing unless the supply of it at our disposal is relatively limited. The air which we breathe is essential to life. But the air is all around us, and ordinarily in boundless abundance. Moreover, we breathe by reflex or automatic action of the muscles without conscious attention. The result is that we do not ordinarily *feel* a desire for air. But in a crowded room where there is a real scarcity of fresh air relative to our need for it, our desire for a breath of fresh air may become very keen indeed. Under such circumstances the air takes on a very different importance as an object of choice. Our impulsive actions and our thought are directed toward getting it. The diver in his diving suit must make this his first and most constant interest; the drowning man tragically feels this need.

The scarcity which we are now discussing is such a limitation in the number or quantity of objects that not all desires can be met then and there by the amount of goods available. In the numberless cases where some desires are not met or are only partially met, we are under the necessity of making a choice as to which desires shall be met. This involves a choice—and therefore a comparison—among things.[2]

§ 4. **Valuation.** If we choose one thing rather than another it is plain that for us the first thing has the greater importance. For one cause or another (instinct, training, experience, imagination, judgment) it weighs more in the scale of our choice than the thing which is rejected. Now in our daily life we are constantly making comparisons of this sort

[1] See note on Aspects of things chosen, at end of chapter.

[2] See note at end of chapter on Various meanings of scarcity.

between things. Few of us—if any—are able to secure all the things which we desire. We are under the necessity of choosing among the various possibilities. We are, therefore, under the recurring necessity of comparing one thing with another, and in so doing, we assess or estimate one thing in terms of the quantity of the other thing. Such an expression of the importance of one object of choice in terms of another we may call a *valuation*.

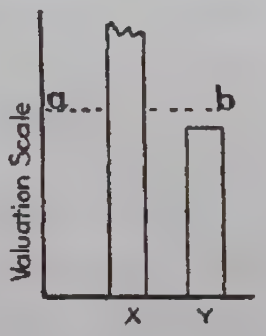


FIG. 1. CHOICE BETWEEN TWO OBJECTS.*

A comparison of this sort between things may take the form of a mere vague preference without any exact quantitative expression of the degree to which the one thing is more important to us than the other. (Fig. 1.) We prefer one object, X, to another object, Y, without attempting to express even to ourselves the exact strength of the preference. On the other hand, our valuations may and usually do take the form of definite mathematical ratios. In the early American fur trade, for example, a beaver skin came by convention to be used as a unit in terms of which the relative importance of other things (e.g., other furs, food supplies, etc.) was expressed. The other things were measured as multiples (or fractions) of the unit.

Suppose, now, that in a similar way, we were to take a number of things, X, Y, M, N, O, P, and Q (taking, of course, a definite amount and grade of each) and were to make an exact estimate of their respective degrees of importance. The accompanying diagram may be used to express in a graphic way the mathematical relations of the importance of any one expressed in terms

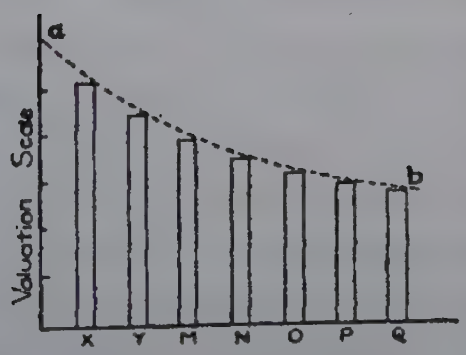


FIG. 2. ORDER OF CHOICE AMONG SEVERAL OBJECTS.

* The dotted valuation line ab drawn through x and above y indicates that the valuation of x is greater than that of y, but the degree of the difference is left indefinite.

of any one of the others. As a matter of convenience we may settle upon a particular one, Q, as a common unit for expressing or measuring the importance of each of the others in turn. This, in fact, is exactly what the fur-traders did. And we do the same in our use of a monetary unit as our standard for the expression and comparison of the relative importance of things.

Viewed as the reflection of an act of choice, a valuation of goods appears to be a very simple fact. Yet underlying this simplicity would be found ordinarily a number of complex motives. Each valuation is a focus of many influences, a resultant of many conditions, some in the environment, and some in the nature and in the feeling of man. According as there is more or less of the various things to choose, and according as the person is more or less hungry or tired or cold or elated or downcast, any particular object may appear to be more or less important, may thus have a greater or less valuation.

§ 5. **One's own labor as a valuation unit.** A valuation involves more than a comparison between external objects. Often one's own labor is brought into the comparison. Choice frequently has to be made with reference to the limited strength and time of the subject, his laboring force. Here there is a twofold comparison; a good is compared with the labor required to secure it as well as with another good. When we are face to face with nature, and goods are to be secured only through our own labor applied to various materials, we are likely to estimate things habitually in terms of our own labor. Labor may under these circumstances become a common unit for the valuation of external things.

§ 6. **Crusoe's scale of valuations.** The economy of Robinson Crusoe serves to illustrate the problems which the individual has to solve when the relation is between man and nature, and not between man and man.

The unfailing interest which old and young find in the story of Crusoe is largely due to the convincing naturalness

of the tale. Each reader feels that he would have done just the same things in just the same order, if he were in the same plight and had been cast ashore as the story relates.

I was wet and cold, and had no dry clothes to put on, no food to eat, not a friend to help me. . . . I had but a knife and a pipe. . . . Where was I to go for the night? . . . I went to a tree and made a kind of nest to sleep in. Then I cut a stick to keep off the beasts of prey in case they should come. . . . The next day . . . I swam up to the wreck which was in a sand bank. My first thought was to look around for some food . . . and I ate some of it as I went to and fro, as there was no time to lose. There was, too, some rum, of which I took a good draught, and this gave me heart. . . . I fell to work to make a raft. I found some bread and rice, a Dutch cheese, and some dried goat's flesh, . . . some fresh clothes and four guns, . . . with these I put to sea . . . and brought the raft safe to land with all her freight. . . .

The next day, as there was still a great store of things left in the ship, which would be of use to me, I thought I ought to bring them to land at once, for I knew that the first storm would break up the ship. . . . The first thing I sought was the tool-chest; and in it were some bags of nails, spikes, saws, knives, and such things; but best of all I found a stone to grind my tools on. There were two or three flasks, some large bags of shot, and a roll of lead. There were some spare sails too, which I brought to the shore.

Now that I had two freight of goods on hand, I made a tent with the ship's sails, to stow them in, and cut the poles for it from the wood.

The next day I had no great wish for work, but there was too much to be done for me to dwell long on my sad lot. Each day, as it came, I went off to the wreck to fetch more things and I brought back as much as the raft would hold. . . .

The last time I swam to the wreck I found some tea and some gold coin; but as to the gold it made me laugh to look at it. "O drug," said I; "thou art no use to me! I care not to save thee. Stay where thou art till the ship goes down; then go thou with it." Still I thought I might as well just take it. . . .

I have said not a word of my pets. You may guess how fond I was of them, as they were all the friends left to me. I brought a dog and two cats from the ship.—(Adapted from the abridged edition, published by H. Altemus, Philadelphia.)

Crusoe knew not at what moment the waves would sweep

into the sea whatever was left. He had scant strength and time for the task. His labor was to be so distributed that he might save from the wrecked ship the most valuable contents. Did he choose well? First, to preserve his life he found a tree to sleep in, and a stick to ward off wild beasts. Then at the ship he took food, clothing, weapons and tools, and made a place to store them safe; and finally came gold and pets. We see how he ranks them then and there, and how different is the scale from that he had before. His remark about the gold is whimsically suggestive of the old lingering standards of choice, and of the dim hope that he might return to live among men, and thus resume his old scale of values.

§ 7. **Choice before and after valuation.** It is usual to speak of the valuation which a person has (or holds or makes) of an object as preceding choice; but evidently this is not so in the case of instinctive choice, and many choices have in a measure this impulsive character. In case of a choice of a thing by a person for his own use the valuation is simply the resultant of choice; it is the arithmetic expression necessarily involved in the action and reveals to the person himself what he has done, how he values the object, rather than determines his action.

In a great many business transactions, however, one is not choosing for his own desires, but is trying to forecast the valuations of others to whom he will sell. There is often, in such cases, a long and careful attempt to express in exact figures the relative importance of different objects before a choice is finally made. In other cases the valuations precede the choice, when a conscious calculation is made of the relative effectiveness of things (heating power, food-value, etc.) and the relative difficulty of getting them (cost in money, distance to carry, etc.). In this sense of a careful estimate of the importance of a thing for business purposes, we speak of an assessor's valuation of property for purposes of taxation, an appraiser's valuation of imports, and a merchant's valuation

of his stock-in-trade. This kind of commercial valuation usually precedes choice by merchants.[3]

§ 8. **Value.** Now as a choice is made and a valuation is thus expressed, the person choosing feels that there is a certain quality in the thing which evokes or determines his choice. This quality of importance which things have when they are the objects of man's choice is *value*. Broadly understood value may be of many kinds: moral (the quality in actions calling for approval or disapproval), religious (the quality in actions, sentiments, and beliefs reflecting what the persons believe to be the will of the deity), esthetic (the quality in objects that accords with the canons of good taste in color, form, sound, etc.). Economic value is but one species of the larger genus of value. It is the quality in an object in the environment to influence a man's action in respect to the control and use of the object. We ascribe this quality to the object that motivates our choice. Bread, meat, dress, houses, land, gold, carriages, slaves, the labor of hired servants, each object is said by you to have (economic) value, just because you feel and know that it sways your behavior in relation to itself. Value in this sense is not inherent or intrinsic in anything; it goes and comes, it grows and wanes, according to the intensity of the desire. It may have existence for one economic subject and not for another. It is not to be thought of as something in a thing before man makes it an object of choice. The logical order is: first, choice; secondly, a valuation by necessary implication; third, value—the quality imputed to the object. Yet in real life these are but three phases, absolutely contemporaneous, of the same thing. Value is but the abstract quality which we attach to the thing in our thought, because of the way it makes us behave in its presence. Value is fundamentally a reflection of the individual choice, though many individuals may have a similar choice, and by their interrelations mutually influence each other's valuations in remark-

[3] It is, however, but the anticipation and reflection of the choices that purchasers will later make. See on enterprise in Part V.

able ways. Objects have their physical qualities independent of man's choice; the apple has form, weight, the texture and skin which to the eye look red, and the chemical elements that give a certain flavor and taste. These singly or combined are not value, tho each has its part in determining under varying conditions, whether the apple is to have also the quality of value. There are as many problems of economic value as there are ways of choosing between economic objects. Their study makes up a large part of economics.[4]

NOTES

Aspects of things chosen. Choice itself has a number of aspects and is made in reference to one or another quality of goods and acts (when certain other qualities are for the time equal or may be left out of consideration). The four chief aspects of choice relate to stuff, form, place, and time, as follows: (1) Choice of *kinds of things* (the simplest case being choice among things present and chosen for their immediate use and enjoyment), as choice between different kinds of objects, such as food and clothing, apples and oranges; or again the things may be of the same general kind but of different qualities, as apples differing in sweetness, smoothness, and in color; or the objects may be of different sizes or be in different quantities. (2) Choice of *form*, as an apple cut and pared rather than one uncut, or cooked food rather than uncooked food, or a made garment rather than the unmade cloth and materials. (3) Choice of the *place*, as an apple here rather than on the tree or on a distant farm, a pail of water in the house rather than at the well, home for one's self rather than the roadside at dusk with home still miles away, etc. (4) Choice of the *time* at which goods of a certain kind shall come into one's control, or that acts should be done, as choice of food at once when hungry rather than later, or of rainfall after a drought rather than during a flood, or the choice involved in keeping of food for winter instead of eating it all in the fall, etc.

These choices occur in many combinations and degrees of difficulty and complexity. It is a large part of the task of economics to study in detail the large groups of choices which are thus made.

Various meanings of scarcity. In economics the idea of scarcity is (as is shown above) connected with limitation relative to the desire for the objects. But "scarce" has other meanings. Sometimes it is that

[4] See note below on Value and valuation.

of rare, or uncommon (which usually, tho not always, implies desirability), as a scarce plant, a scarce butterfly, or a scarce stamp. Scarcity means also a small amount compared with the average or usual; it is said that wheat is scarce the year of a poor harvest tho there are millions of bushels of it, and conversely that "wheat is not scarce," when there is a good harvest; yet in relation to choice it is merely less scarce than usual.

Value and valuation. The words value and valuation are frequently used interchangeably without much harm; yet for great precision it would usually be better to distinguish between them. The essential meaning of value as given in § 8 (a quality imputed to an object by a man) is individual, that is, it relates to a particular person. The meaning is somewhat different when value and market value are used for convenience to express a valuation, that is, some one's estimate (as a statistician's, an official's) of the amount of goods in terms of price, such as the value of the imports and of the exports, the total value of the wheat crop of the country, the value of all the outstanding stock of a corporation. This valuation is obtained by multiplying the whole number of units of goods, shares of stock, etc., by the price in a single transaction. This valuation is not to be confused with price; price is an actual amount of money paid, whereas the valuation is an estimate of the total number of dollars for which all the articles could have sold, if they had changed hands at that price. In fact, in many cases, many of them did not change hands at that time.

CHAPTER 3

GOODS AND PSYCHIC INCOME

§ 1. Inherent physical nature of things. § 2. Free goods and economic goods. § 3. Harmful objects. § 4. Value and true welfare. § 5. Gratification of desire. § 6. The idea of income. § 7. Psychic income. § 8. Motivating force of psychic income. § 9. The personal equation in psychic income. § 10. Desire streams and income streams. § 11. Goods of direct use. § 12. Directness of use defined.

§ 1. **Inherent physical nature of things.** Man has to take the physical nature of things as he finds it. He can, to be sure, make certain changes in the relative positions of particles or masses of matter. He can decompose a chemical compound into its elements; he can change iron into steel, and with this construct elaborate machinery; he can make clothing of vegetable fiber; he can cut a canal through an isthmus that united two continents. He can, in short, make many changes in his physical environment and, within limits, he can adjust it to his liking. But the physical and chemical forces of the world, acting in ways which we express as natural laws, are beyond the power of man to change. He may rise above the earth in a balloon, or even travel through the air in a heavier-than-air machine. But the force of gravitation is acting upon him during every moment of his flight. Material things differ in their specific gravity, in their power to reflect rays of light, or to absorb or transmit heat. They differ also in their chemical qualities. Niter, charcoal, and saltpeter, combined in certain proportions, form an explosive. Other proportions give other results. Solids combine to form gases and liquids unite to form solids, and these qualities and reactions of material things are for men ultimate truths of chemistry. Sunshine

acts on living bodies, whether plant, animal, or man, in certain ways. Some plants are nourishing food for animals, others are poisonous. If man were not living on the earth, things would, so far as we can conclude, have the same physical and chemical qualities, and mechanical laws would be the same as at present. They are not governed by the will of man. Man can, however—and does—slowly learn the nature of things, and as he does so he makes choices among them, uses them for his purposes, combines, separates, and adapts them so that he may better bring about the results he desires. The fitness of things for accomplishing man's desires is what makes them objects of choice.

§ 2. **Free goods and economic goods.** We have already seen that some things, even such as are indispensable to existence, may yet, because of their abundance, fail to be objects of desire and of choice. Such things are called *free goods.* They have no value in the sense in which the economist uses that term. Free goods are things which exist in superfluity; that is, in quantities sufficient not only to gratify but also to satisfy all the desires which may depend upon them. The air about us is ordinarily a good of this kind. Water, too, tho in certain places and at certain times where it is scarce it takes on a value, is in many places so abundant that it falls in the category of free goods. The same is true at certain times and places of firewood, fruits, and other things, when there chances to be a surplus, relative to the desires of men. In such cases both the portions which are used and the other portions are without value—are free goods.

There is always something puzzling about this as one begins to think about it. It seems unreasonable to say that diamonds, laces, cigarettes, have value, and air and water have not. But the explanation is simple. Tho we must have air to live, and tho every breath we draw is to supply this need, our attention need not ordinarily be given to the matter of the supply of air at all. So long as it is present in abundance, the desire for it has no chance to rise to noticeable intensity,

and remains constantly at the zero point. Men do not concern themselves about that which they have in superfluity—unless indeed the excess causes them some discomfort. It is well that they do not, for a wise direction of effort can take place only when men think mainly of the things that are lacking and direct their efforts toward securing them.

Most kinds of enjoyable things are constantly being used up before every use dependent on them can be made. Our stocks of such things become therefore the objects of our choice. We strive to use them with some care and attention. Such goods are called *economic goods,* being the goods which have value and therefore must be economized. As we have already seen, a certain thing may be a free good at one time because of its abundance and at another time it may be an economic good because of its scarcity.

§ 3. **Harmful objects.** Beyond the boundary of economic goods and of free goods there lies an anti-economic environment, the harmful: destructive lightning, floods, poisons, vermin, pests of locusts, disease-breeding swamps, wild beasts, human enemies, and many other ills of earth. While some water continues to be "a good," other water may be "an ill," flooding one's cellar, or soaking one's clothes on a cold day, or breaking through the walls of a mountain reservoir and carrying death and destruction in its path. Pure air may come as a tornado, fire may destroy our dwelling, growing woods may cover the fields needed for tillage, iron may crush the foot or cut the hand. And so, anything may become harmful, while in turn the "harmful" may become useful. Poison helps rid the house of vermin, disease germs may be made to serve as antitoxins, noxious weeds may, by the discovery of some new process, be worked into useful forms, tho they may still continue to be harmful in many a farmer's field.

§ 4. **Value and true welfare.** It will be noticed that the things that are valued, the things that we call economic *goods,* are things that have a relation to the choices or desires of men. It must not be thought, however, that they are of

necessity conducive to real welfare, either generally or permanently, as the term "good" might seem to imply. In many cases they may be so, but what shall we say of the pistol which the highwayman points at his victim, or of the poison with which the lunatic kills his friend, or of the opium for which the miserable victim would give his birthright, or of the whisky which is ruining the happiness of the drinker and of his family? For the individual these things, being the objects of choice and desire, have value, and the term "economic goods" has been extended to cover things of this sort. The economist, however, must not overlook the injurious results of such uses, and in his final judgments on economic welfare must endeavor to see a larger good than that of the moment and of the individual desire.

The term *utility* properly expresses the idea of this fitness (a quality) of things to conduce to real welfare quite apart from the subject's knowledge at the time of his choice. This is in accord with usage as well in biology (for example, in discussing the utility of certain organs) as in the moral sciences (for example, in studying the utility of certain institutions). We should beware of the very frequent confusion of the terms value and utility, and throughout we shall connect the idea of value with choice and not with utility. Later, in considering the more lasting effects that wealth has, either upon the individual or upon society, utility has its place.

§ 5. **Gratification of desire.** We have already seen that there is in our desires for things an impulsive or an instinctive element. But with our growth through childhood into maturity, experience accumulates, and our choices among things and our desires for things come to have in them elements of memory, calculation, imagination, and reason. We desire an article of food partially because we have already tasted it and imagination recalls the sensation which it gave us. We desire a plow because our reasoning powers tell us that the plow will assist us in growing the crop which is to serve as food. So as

we develop intellectually it comes about that judgment dominates our desires to a very considerable degree. Now if we have a desire for a thing, and succeed in securing it, a change takes place in our desire. This change we call *gratification.* (Or if the desire is completely met, we speak of the change as the *satisfaction* of the desire.) It is the sensation (feeling) which accompanies the getting of the thing desired.[1]

§ 6. **The idea of income.** Desire is a mental reaching out for things. The fulfilment of desire involves the securing of the objects of desire, and this brings us to the idea of *income.* We find the term used in a number of different senses. Income may consist of certain concrete goods which come in to a person during a given period—such as bread, butter, meat, clothing, etc., the quantity of which is expressed in physical units, such as bushels, pounds, yards, etc. A stream of goods of this sort is sometimes called *"real" income* in contrast with *monetary (or pecuniary) income,* which is a certain sum of money—or its equivalent in credit—received by a person within the period under consideration. If this terminology seems to imply that monetary income is less "real" than an income consisting of food, clothing, etc., the explanation is that a money income is but a means to an end. It is likely to

[1] This is the sense in which we should regularly use the term in relation to valuation. But sometimes the word gratification is used to denote the pleasure of the senses which accompanies not the mere getting of the thing, but the using of it after it is secured—for example, the sensation which accompanies the eating of food, the listening to a musical instrument, or the looking at a picture. The gratification of desire at the moment of attaining a good reflects a provisional adjustment of choice, which is subject to correction by experience. As far as practice and judgment guide our desires, the ultimate use of a thing and the sensations which accompany that use, may be deemed to be the explanation of the desire. This does not mean that our processes of valuation are a cold calculation of the sensual gratifications to be obtained from goods. But it does mean that the anticipated use of a thing enters into our desire for it. And it means also that judgment, foresight, and calculation play their part along with instinct and impulse in our desires and our evaluations.

be used to purchase all sorts of concrete goods—such as food and clothing—which are the real objects of desire. However, in the commercial world, and in ordinary life, we are very much in the habit of expressing income as a sum of money accruing within a period. This is perhaps the sense in which the term is most frequently used.

§ 7. **Psychic income.** A closer consideration, however, discloses the fact that there are many desirable results which cannot be included either under "real" or under "monetary" income. Many choices made by men are not directed to securing material objects. The term real income can hardly be strained to include the services of the hired laborer, the man's own direct services to himself, the valued social esteem which leads one to take a lower salary for harder work, etc. It is difficult to estimate such things in monetary terms or in terms of other concrete goods, and often the attempt to do so is not made. For we are dealing here with things which are in the realm of feeling. We may call them *psychic income,* and we may define the term psychic income as desirable results produced in the realm of feeling by valuable objects or by valuable changes in the environment which accrue to or affect an economic subject within a given period.

We have here reached something fundamental in our analysis. It is not merely that many items of income take this form and this form only—not being embodied in any tangible shape. But concrete, tangible objects (monetary or non-monetary), are regarded as income, as something desirable, just because their ultimate effect is to bring about such changes in the realm of feeling as we are now discussing. The food that we eat banishes the sensation of hunger. Clothing protects us from the cold, gives the feeling of being well-dressed, etc. The musical instrument creates, through our nerves of hearing, the pleasurable feelings of harmony. The beautiful picture, the automobile, the pleasure yacht—all the many kinds of concrete goods which man desires—are objects of desire to him because of their capacity to affect the sensory system,

and, through that, his mental life. It is clear, therefore, that any adequate enumeration of the group of things which we call income must take careful account of these psychic elements. The estimate of a man's income merely in dollars may leave out items which are of the greatest significance to him. A man will work for a certain salary in an occupation that he enjoys who might refuse several times the amount in a less enjoyable or actually disagreeable line of work. A family may choose to live in a small house in a particular neighborhood, rather than in a larger house with greater physical comforts in a less attractive neighborhood. A girl who can live at home may accept what would otherwise be an inadequate wage—an income which would not support her if she lived elsewhere.

§ 8. **Motivating force of psychic income.** It may be seen that (anticipated) *total* psychic income is what motivates our economic activity—at least as far as this activity is determined by conscious purpose. There are men holding public office to whom the salary received is an insignificant consideration. They are paid largely in public esteem, or in their own consciousness of duty well performed. And in as far as men work for material rewards—money or goods—their ultimate ends are not material. They are in the realm of the psychic. Except to the miser, money is not an end in itself (if it is even in that case). Nor are stocks and bonds, or real estate, or even clothing and food, ends in themselves. Man's psychic life is the thing which is of ultimate concern to him, and all these things appeal to him because of their relation to that complex of sensations and feelings of which his psychic life is composed.

§ 9. **The personal equation in psychic income.** The magnitude of the stream of psychic income depends in large measure on the natural temperament, on acquired habits of life and thought, and on the state of health of the individual. One person gets delight from small things; another is miserable in the midst of luxury. In 1913 the richest man and wife in

Switzerland committed suicide together because they felt that they had nothing to live for; whereas the mass of the hard-working Swiss with their scanty material incomes, are as joyous and contented as any people in the world. Nothing can equalize these subjective differences between individuals, but each individual, in his choice, compares things with reference to their psychic income-value to himself; he does not judge them merely by their physical or by their pecuniary measurements. But when in moralizing strain, we say that the source of happiness is within oneself, we speak within limits. For the most joyous and optimistic of persons must have some of "this world's goods" or life itself becomes impossible.

§ 10. **Desire-streams and income-streams.** It is not enough, however, that we should have a supply of goods at a given time; we need an "income stream." Our desires are nearly all recurrent. Hunger, tho fully satisfied, returns again. One circus does not last the boy a lifetime. New clothing quickly becomes old. We weather one storm only to feel an equal need of shelter from the next. To meet this series of desires and wants we require a pretty regular flow of goods and services.

We may liken man's life to a journey in which the supplies of food and of other goods are got at the daily stations. If any one of these supplies fails, the traveler suffers the pangs of hunger, and if two or three supplies are at one point, they do not serve his needs so well as if distributed along the way. This almost unbroken inflow of certain kinds of goods is a necessity of existence. The savage dimly understands this need. Even the birds and the beasts adjust their lives to it by toil and by travel. The spring and autumn migrations to new feeding grounds are the attempts of the bird to secure this income. The ant, the bee, and the squirrel anticipate, and work to fill their storehouses against the days of need. Man has to take thought to provide the much more complex series of goods upon which his desires are directed.

§ 11. **Goods of direct, present use.** These goods are of

many kinds, but we may give our first attention to the goods of present, direct use to secure psychic income. Such is food to the primitive man, a skin to wear over his shoulders, a club to defend himself against his enemies. Such, to-day, is the cup of coffee on the table, the fire on the hearth, the furniture, the house, the land used for playground, tennis court, park, the clothing we wear, and countless other objects in daily use. Thus in every case that a desire is gratified, whether of child or of man, of poor or of rich, the relationship may be traced between psychic income and goods of direct use. Warmth is to be had by the use of clothing, shelter, and fire; light is given by the candle, the lamp, and the electric light. All around men are things just ready to serve the final use of yielding enjoyment, or just on the point of "ripening" or becoming fitted to serve this end. These goods of present, direct use are the first and almost the only concern of the animal, of the child, or of the savage. To man in developed economic conditions these goods are still the immediate objective conditions to the creation of his psychic income.

§ 12. **Directness of use defined.** Directness of use is that quality a good has of yielding to its possessor its ultimate economic use (psychic income) without the physical intervention of any other agent (between itself and the user). Examples of goods having direct uses are food ready to eat, fuel to give warmth to the body, the candle to give light, a beautiful picture, a riding horse, clothing, ornaments, furniture, dwelling houses, general services of all kinds, such as the musician's song, the services of actor, teacher, lecturer, preacher, physician. When these uses and services produce psychic income directly (without the aid of any intervening agent), they are direct uses.[2]

[2] The directness here considered must not be confused with immediateness in time. Directness here refers to the number of steps or processes that separate the good from the final use to the owner. It is the quality which an object has when it gives the sensual stimulus which results in psychic income. Time-value is the special subject of Part IV.

CHAPTER 4

PRINCIPLES OF EVALUATION

§ 1. Quality, a reflection of desire. § 2. Substitution of goods. § 3. The principle of substitution. § 4. Substitution of like and of unlike goods. § 5. Complementary goods. § 6. Changes of desires and of valuations. § 7. Effect of repeated stimuli on our feelings. § 8. Different quantities and corresponding desires. § 9. Stock of homogeneous units: principle of indifference. § 10. Diagram of marginal valuation. § 11. The paradox of value.

§ 1. **Quality, a reflection of desire.** Our task now is to explain—in the case of present, directly enjoyable goods—the elementary principles of valuation. We have already seen that things have inherent physical and chemical qualities which are quite beyond the power of man to change. We can go further than this and say that no two objects are exactly alike. Each object is in an extremely literal sense a "unique." "Alike as two peas" means merely so near to likeness that the eye cannot detect the difference. The differences are minute, and for many practical purposes quite negligible. It is such a degree of likeness for practical purposes which we have in mind when we speak of a "grade" of goods, and (somewhat inconsistently) of "like" goods having different qualities. Thus all apples may be spoken of as being "like" goods. They are alike botanically; they are also alike to a degree in the uses to which they are put. There are, nevertheless, different varieties of apples, and the apples of a given variety may always be "graded"—according to size, or to color, or to degree of perfection—when the grower uses them himself or prepares them for the market. These differences are inherent in the apples themselves. When, however, we speak of apples of "good quality" or "bad quality," we

mean simply that we desire the so-called good ones more than the so-called bad ones. As between two apples, the one which we desire the more is spoken of as of "good" or "superior" quality. But plainly the goodness or the superiority lies in the relation to our desires. So that quality is partly a matter of inherent differences, and partly a reflection of our desires. Thus if (in Fig. 3) 1, 2, 3, and 4 are apples which are practically alike except in one particular—sweetness, for example

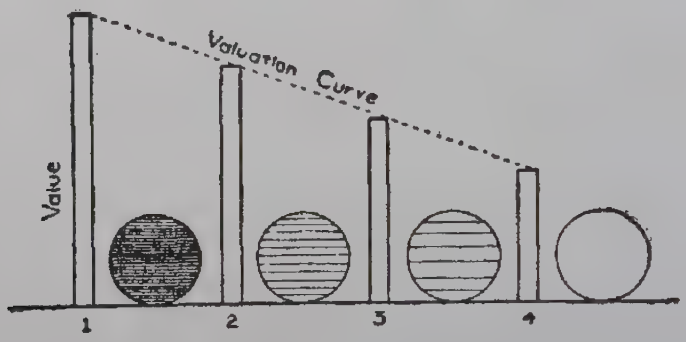


FIG. 3. GRADES OF GOODS AND CORRESPONDING VALUES.

The shading of the circles indicates differences in physical qualities of objects, as in color, in sweetness, etc. Corresponding with these differences the values, represented by the columns, range from high to low. If the tops of these columns be connected by a line, its distance above the base line indicates the valuation of each in terms of any one of the others.

—and if we have a preference for sweet apples we are likely to rank them as to value according to their sweetness.

§ 2. **Substitution of goods.** If now we have an abundance of apples of the greatest sweetness or best flavor, those of inferior quality will make little appeal to our desires. The best apples have a high value; the poorest have little or none. Because of their abundance, or the abundance of the better grades, the apples of inferior quality may even be free goods, lacking in value because not in the smallest degree the objects of desire. If, on the other hand, apples of the finest flavor are few in number, those of the next best grade will become objects of desire, and will therefore have a value for us. We come in this way to attach different values to the different grades. This act of resorting to objects of inferior quality

because of the scarcity of the better grades, is *substitution of goods.* It is but the objective aspect of the shifting in our desires. It is a simple matter, but it has its bearing on the general problem of value. The thing that is fundamental in the valuation of different grades of things is the connection between these various grades and the desires of men.

In some years, when the difference in quality between the grades of apples is marked and there is a large crop of the best grade, the small, knotty apples are free goods in the orchards, and are allowed to rot on the ground. In other years, when good apples are scarce, the poorer grades are gathered and are sold at good prices. But if there is an abrupt difference in quality between two grades, the value of the better grade may rise considerably before there is any use made of the poorer. The slighter the difference in quality the more quickly appears the effect of the presence of the lower grades in limiting the increase of value of the higher grades.

§ 3. **The principle of substitution.** Substitution of goods in the simplest case occurs where an individual is distributing two or more goods or kinds of goods to different uses. His object is to gratify his desires to the maximum, by economizing the more valuable goods and making the less valuable goods serve some of the same purposes. This may be expressed as a general principle of substitution as follows: goods of kinds and of grades the most valuable are applied to the more urgent uses they are capable of meeting, and less valuable goods are brought in to take their place (substituted) up to the point where the value of each use and the value of the good applied to it are equal.

No grade can be said to be the cause of the value of the others. There is an independent reason for the attaching of value to each grade of goods. Each grade would have value if there were none of the other. But they mutually affect each other's value when they exist side by side. The value of each is lessened by the presence of the other. And thus two or many grades constitute for many purposes a single

group of goods which shade gradually into each other by the shifting of choice.

§ 4. **Substitution of like and of unlike goods.** The cases of substitution most easily called to mind are between goods very nearly alike in physical nature and used for the same general purpose: cotton and wool for clothing; fish and venison, or peaches and pears, for food; candles and petroleum for light; stone, brick, and wood for house building; horses, mules, and oxen for hauling. But cases may be found which range in almost unbroken series in either direction—towards the substitution of practically like goods on the one hand and towards the substitution of most unlike goods on the other. One may go without overshoes to get books, without candy to go to the theater, without adequate food to get an education.

§ 5. **Complementary goods.** Some goods, however, instead of being substitutes have a complementary relation to each other. Two or more kinds of economic goods are said to be complementary when either one, instead of taking the place of the other, enhances its desirability. The one complements (fills out, completes) the other. Cases occur where the one good is entirely useless without the other, as the two gloves of a pair, a gun without powder, fuel without flame to light it, etc. In another class of cases the one is still of some value, but of less value, without the other, as salt in the food, one of a finely matched pair of horses, etc. In one way or another and at various times, a great many most unlike goods may become linked together in choice by this *complementary quality*. This gives rise to interesting, sometimes puzzling, problems of valuation. A group of complementary goods is valued as a whole; but if one part is missing the rest may be worth nothing, and a part may for the moment be worth as much as the whole. If a good in one of its possible uses is highly complementary, perhaps indispensable to another good, it will be valued for that use, and a substitute found in other uses. Economics is full of problems of complementary goods.

Some of these occur in the use of enjoyable goods, and still more occur in production by means of complementary agents, the consideration of which must be postponed till later in our study.

§ 6. **Changes of desires and of valuations.** Choice is constantly being affected by changes within men (subjective) as well as by changes in the objective conditions. Desire is constantly shifting; different kinds of goods are at every moment being revalued according to the new conditions. The use of one unit of a good causes the valuation of the remaining portions to drop down the scale for the next moment. When we rise in the morning, we desire breakfast; the breakfast eaten, another breakfast does not appeal to us. Our tasks done, we take a boat ride or go golfing; then, appetite returning, we are tempted to our dinner. And thus from hour to hour desires are gratified, are altered, and are shifted, until, wearied with the day's labors and pastimes, we go to rest. No impression on the nerves or on the senses is lasting. The "consciousness" is not a state; it is a ceaseless process. Man's senses were evolved for the purpose of bringing him into relation with the outer world, of enabling him to survive in his struggle with the forces of nature. When a choice occurs, the corresponding desire falls for that particular moment, it may be even to zero. To keep desires satisfied is impossible. Desires recur for the same reason that they first arose. If they did not there would be no motive for action. We can not do next week's reading or next week's eating now. The best results in reading or eating come from taking the right amount day by day. In a well-ordered life, in an advanced, economic society, the means for gratifying desires as they arise are provided in advance. The changing series of desires is met by a changing series of goods. Life has been defined as a constant adjustment of inner relations to outer conditions. Economic life is therefore like physical life, a constant adjustment; and this adjustment of goods but reflects the shifting and adjustment of feelings.

§ 7. **Effect of repeated stimuli.** It is in the very nature of man and his nervous organization that any stimulus to the nerves, however pleasant for a time, becomes painful when long continued or increased unduly. The trumpet too distant at first for the ear to distinguish its notes, may swell to pleasing tones as it approaches, until at length its volume and its din may become absolutely painful. A man coming in from the winter storm and holding out his hands before the fire enjoys the warmth intensely; a few minutes later the same heat becomes unpleasant. In winter we wish for a moderation of the temperature; on the sultry days of summer we think of a cool breeze as the most to be desired of all things. Whether the temperature rises or falls, there is a point beyond which the change no longer adds to our comfort but begins to detract from it. A man, however hungry at first, may be made miserable if forced to eat beyond his capacity. The first sup of cool water is delicious to a thirsty man; a second and third glass, but not more, may still be grateful. Forcing one to take an excessive amount of water is one of the cruelest of tortures (sometimes called the "water cure"). Of every economic object it may be said, "One may have too much of a good thing." The statement of this relativity of desires and successive gratification, is called the *principle of diminishing gratification.*[1]

§ 8. **Different quantities and corresponding desires.** It has already been made clear that the scarcity or abundance of a good has its effect upon our desire for that good. We can make use of more or less of it, but not of an infinite amount. If a very small quantity is available, we may use that quantity and still feel a fairly intense desire for more. If the quantity available is large, our consumption may be increased, but a desire (less intense) for more may still remain. A limit will be found somewhere, however, to the use that we can make of the good, and if this limit is reached—if the quantity available is so great that absolutely all our desires for it

[1] See note on the Weber-Fechner law, at end of chapter.

are satisfied—the value of the good will fall to zero for the reason that desire has completely ceased. Clearly the intensity of desire changes—and changes inversely—with the quantity of the goods available. If now we may be allowed the latitude of speaking of these various intensities of desire as *different desires,* we may say that there is a series of desires capable of being gratified by various quantities of the good in question. A small amount will gratify the greatest or most intense desire, an additional amount of the good will meet the desire which comes next in intensity, and so on until finally we reach the point where, with the whole series of desires already met, an additional amount finds desire completely lacking and value therefore at the zero point.

§ 9. **Stock of homogeneous units; principle of indifference.** If now we consider a quantity (stock) of the good which is capable of gratifying a part, but not all, of our desires, it is plain that a value will attach to the good. If it is a stock made up of homogeneous or identical units, there is no reason for preferring any particular unit to any other.

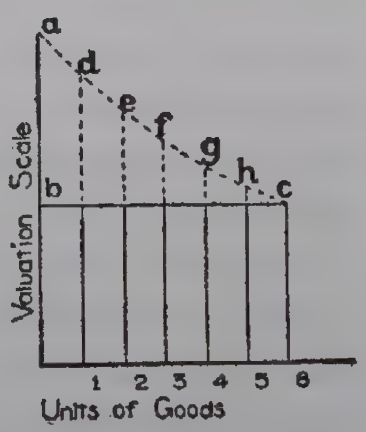


FIG. 4. THE PRINCIPLE OF INDIFFERENCE.*

True, in advance of using the goods, we say that some of the desires are more intense than the others. But when we begin to use a stock of homogeneous units this difference must disappear. For we will begin by applying the goods first to the more intense desires, and as we have just seen, this re-

* To show this graphically, let the units of goods be plotted on the base line. If but one were present its desirability measured on the perpendicular (valuation scale) or parallel with it, is indicated at the height d; if there were a second unit its desirability would be indicated by e; and so on until with six units the value of the sixth would be c. But if the units are perfectly interchangeable, the value of every unit would now be the same as that of the last, and is measured by the height of the straight line bc above the base line, and not by the height of the curve ac.

duces their intensity. We then apply goods to the desire formerly ranking next in intensity. And so successively, we apply the goods to the more intense desires remaining, and as they fall in intensity we take in, one after another, the desires which at first were less intense, continuing until the whole stock of goods has been applied. In this way we bring to equality the values of all the units that are actually used (if the goods are divided into very small units). We have come to the limit, or the margin, of the series of desires that this stock of goods is capable of gratifying, and outside of this limit may remain various ungratified desires.

The marginal desire (originally the least intense of the desires now gratified) now marks and expresses the *actual* value of each of the other units of the stock. This is the marginal valuation. The stock being made up of homogeneous units, equally fitted to gratify any one of the series of desires, no unit can be valued at the moment more than any other unit. The aspect of valuation here presented is called either the *marginal principle* (thinking of the least intense desire), or the *principle of indifference* (thinking of the equal fitness of the objective units), and may be expressed as follows: each unit of a person's stock of like goods which is actually at hand and equally convenient for use, is of equal value with every other unit, no matter to what use it is there applied. Of course this holds only as to the particular time and set of conditions, and desires may change in the next moment.

§ 10. **Diagram of marginal valuation.** This principle of valuation may be illustrated by the following diagram in which horizontal distance represents stocks of goods of various amounts, and perpendicular distance represents marginal valuation or value per unit. Let us assume that in the case of a stock of ten units the marginal valuation (value per

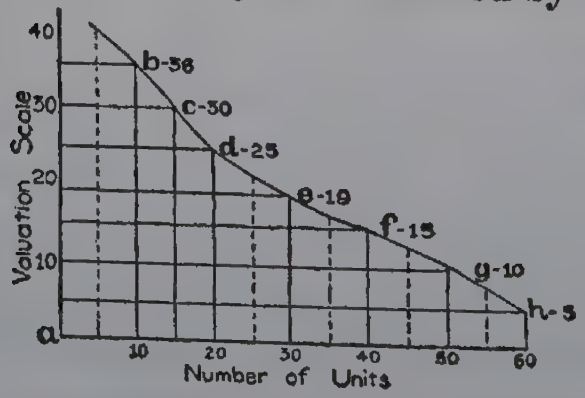


FIG. 5. MARGINAL VALUATION.

unit) is 36. The value then ascribed to the whole stock will be 360 (represented on the diagram by the rectangle *ab*). If instead of a stock of ten we consider a stock of fifteen, then since fifteen units will gratify more desires than ten units, leaving fewer desires still unsatisfied, the marginal valuation will be lower—for example 30 instead of 36. In this case the value of the stock is 450 (rectangle *ac*). And similarly, for stocks of various amounts, we get marginal and total valuations as shown in the following table:

Units of commodity	Marginal valuation in terms of anything else taken as a standard	Valuation of whole amount
10	36	360
15	30	450
20	25	500
30	19	570
40	15	600
50	10	500
60	5	300

The first thing of significance in the diagram is that the marginal valuation, or value per unit, is large in the case of a small stock, and small in the case of a large stock. And this means simply that when we have a small supply of a commodity we set a high value (per unit) upon it; when we have a large supply its value per unit to us is small. This, of course, is a familiar fact of daily experience.[2]

§ 11. **The paradox of value.** One thing more may be pointed out by way of further study of the diagram. Corresponding with any given stock—for example a stock of ten units—there is a rectangle (Fig. 5, *ab*) which represents graphically the total value of the stock—that is, the product

[2] It is evident that the various parts of a stock of goods can be valued on the marginal principle only when it is possible to choose among the various units and to apply them to various uses in such proportions as one will. If another person controls the whole stock and compels us to choose "all or none" we may be forced to value the whole stock according to our more intense desires. This is a fact of great importance in some practical problems, such as those of monopoly.

of the value per unit by the number of units. In the case of a very small stock this rectangle will be very small. On the other hand, in the case of a very large stock, since the value per unit is small and may even reach zero, the rectangle will also be very small, reaching zero, as we have already seen, in the case of free goods. Somewhere in between these two extremes, of course, there will be a maximum rectangle (Fig. 5, *af*), a stock the total value of which is greater than that of either a larger or a smaller stock. This fact (brought out also in the third column of the table) that after a certain point an increase of the total stock will result in a decrease of the total value, has been called the "paradox of value." Cases have been known of the partial destruction of a stock of goods by its owners as the result of their calculation that the remainder would actually sell on the market for more than could be secured for the whole original supply.

NOTE

The Weber-Fechner Law. In part the effects of repeated stimuli are probably explained by a law of psychology. It is that geometric increase of the stimuli acting on any of the senses is required to produce an arithmetic increase of sensation. It holds "approximately and within a certain middle region of the intensive scale for intensities of noise and tone, of pressure, of various kinesthetic complexes (lifted weights, movements of the arms, movements of the eyes), and of smell." "There is some little evidence that affection on the intensive side obeys Weber's law." (Titchener, "A Text book of Psychology," 1911, pp. 218, 259.)

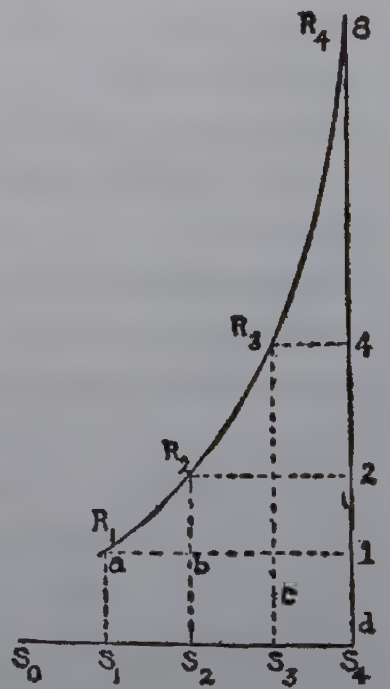


FIG. 6. THE WEBER-FECHNER LAW.

The points on the curve R_1 to R_4 indicate the total stimuli (measured on the ordinate by scale shown at right) required to produce a given degree of sensation, shown by abscissas measured on line S_0 to S_4. While the stimuli increase in geometric ratio (1, 2, 4, 8) the sensations increase in an arithmetic ratio (1, 2, 3, 4.) The relative quantity of sensation *per*

unit of stimulus is represented by the height of a, b, c, d respectively above the base line. The second R produces sensation equal to the first, the third and fourth R (average) produce ½ as much sensation, the 5th to 8th R (average) produce ¼ as much. The curve a-d corresponds with the observed trend of decreasing valuation in many cases. It is clear, however, that valuation does not always (perhaps not usually) rise and fall in curves exactly parallel with sensation; for example, a first and a second unit of R might (if there were no more) be neither pleasurable nor valuable; a third and fourth might raise the total sensation to a degree where it was desirable and valuable; and not until the fifth or some latter unit would an additional unit of R add a smaller proportional value. The correspondence between decreasing sensation and decreasing valuation is thus found only at certain middle regions of the scale.

CHAPTER 5

TRADE BY BARTER

§ 1. Advantage of trade. § 2. Barter. § 3. Some trading terms defined. § 4. The problem of price in simple barter. § 5. Demand. § 6. Supply. § 7. Limits of advantage in isolated barter.

§ 1. **Advantage of trade.**[1] Whenever two persons having valuable goods meet, there is a chance that their valuations of goods at that time will not be the same. One person may have more food than he needs at the time but be lacking in clothing. If each gives to the other some of the good which to him has smaller value, and receives some of the other good, in an amount which to him is more valuable, each of the two parties will be the gainer. This mutual giving is trade. Trade increases the range of choice open to men. Each good that can be traded takes on a new importance, that of procuring other things in trade. In addition to its own power to

[1] **Definition of trade.** Of several meanings that the word trade has had, two are still usual: (1) a regular occupation, more especially a handicraft, as the carpenter's trade, to learn a trade, used thus in reference to labor problems, the trade union, etc.; (2) an exchange of goods. In the latter sense it may have a general meaning, (a) an exchange of goods whether made by the use of money, or otherwise, when there are several traders present or only two; or (b) exchange between two traders, without the use of money. Usually it has this meaning in such expressions as "a horse trade," a "knife trade," etc. Used verbally, *to trade* has as synonyms: (a) to exchange, to traffic, and (b) to barter, to truck, to swap, or swop, used colloquially in England and Scotland as well as in the United States. We shall use "trade" in the broader sense (2a) of exchange by whatever means, and shall employ the word barter in the special sense (2b) of trade without the use of money, while we may call cash trading, or monetary buying and selling, the case of trade where money is used.

gratify a desire, it gains a representative quality and appeals to desires with the power of all the other objects for which it can be traded. It draws its value from two or more sources, one source being its own direct uses, the other sources being the uses of each thing for which it may be traded. This led men to speak of value-in-use and value-in-exchange. But it must not be thought that an object has to any one person two values at once; for as each good had before but one value at a time to any one person tho it had many uses, so when it gets the trading use, it continues to have but one value at a time, as determined at the margin of least urgent desire.[2]

Readiness to trade shows a man's desire to redistribute his goods in accordance with the principle of substitution. He virtually says: "Part of what I have I am ready to give for part of what you have." The relative strength of his desire for the other good is expressed in part by the amount of his offer. When he makes this comparison and this offer, he enters into the social, economic relation of trade with his fellows.

§ 2. **Barter.** Trade without the use of money or even the form of the money-expression, is rarely seen by the city boy to-day. Yet it has played a great part in economic history. In early societies the differing natural products of different localities were the most usual objects of trade. Salt, so essential to life, is on the whole plentiful, but it is found in comparatively few places, in rare springs, and in the salt seas, and was eagerly brought from great distances. Copper, when it took the place of stone as the material for weapons of defense or of the chase, was sought far and wide. Rare shells, feathers, jewels, and the precious metals appealed in early times to a universal desire for ornament. Products like these were in early times the objects of a rude sort of trade, which took the form of gift-making or of barter, accompanied by much higgling, in the simple efforts to adjust possessions better to desires. In the Middle Ages, outside the cities, which were

[2] See ch. 4, sec. 9.

very small compared with those of to-day, almost universally a "barter economy" prevailed or, as it has been called, a "natural economy" (a term taken from the German "Naturalien," which means natural products, enjoyable things, as opposed to money). Natural economy, therefore, means that condition of society in which things are exchanged "in kind." In the Middle Ages land was the chief form of wealth. Even princes were dependent on the products of land for their incomes. The peasants were "paid" (as we think of it) for their work by the grant of the use of land. The income of the landlords was in the form of "Naturalien" (wheat, chickens, eggs, etc., as well as labor), the kind and amount of which were fixed by contract or by immemorial usage. The use of money has greatly changed these conditions in Europe and America, but barter still is used in outlying districts, and in backward countries. It occurs more frequently than one is likely to think, in trade between savages and civilized traders, in rural districts, on the school grounds, between neighbors in horse trades and house trades, in multitudes of trades made by the help of want advertisements, and in many other cases.

The extent of the use of barter to-day does not, however, measure the importance to the economic student of understanding it. The true measure is the fact that without comprehending the process of barter it is impossible to comprehend much beyond the superficial aspects of developed markets and prices. The zoölogist studies the simpler forms of life, unicellular or little organized, as the best way to understand the higher organisms; so we must analyze the simplest forms of trade as a means to the comprehension of the most complex. Barter contains within it the elements from which develop all the forms of commerce.

§ 3. **Some trading terms defined.** *Buyer and seller* are the two parties to the transaction, the two traders; the buyer being the one acquiring a good not in his possession, the seller the one giving up the possession of that good in return for

something else. Either of the goods may be taken as the point of departure in thought, and either party to the trade may be then looked upon as buyer or as seller.

Price is the good given by a buyer in a trade. In barter either good may be looked upon as the price of the other. At present one of the two goods is most often money of some particular kind expressly mentioned, or clearly implied. When money is used in a trade, its quantity is looked upon as the price, and the other good is looked upon as sold for, and bought with money. Price may be per piece of a conventional size, as per quart, bushel, yard, pound, or for the entire group of objects or amount bought, as the price of a farm, of an entire stock of goods, etc., as is likewise usually shown by the context. The other good, that for which a price is paid, may be called the *sale-good.*

§ 4. **The problem of price.** Few words are more often on the lips to-day than price. If the price of a thing is high, the thing is dear; if price is low, it is cheap. What makes things cheap or dear? That question puts the price problem. It is a matter of every-day observation that when things are more plentiful than usual they are pretty sure to be cheaper; when they are scarcer than usual they probably will be dearer. Hens lay few eggs in the winter, but many in the spring. Apples are few on the trees and of poor quality one year, and plentiful the next. Rains are late and inadequate, and the crop of cotton in the South, or of corn in the Middle West, or of hay in the Northeast of the United States is small, and as quantity is small prices are high. Every one knows in this general way about prices and the reasons why prices change. Some men of business become astonishingly skilled in following and anticipating the changes in price of the particular goods in which they deal. But the purpose of the student of economics is not to learn the conditions that influence the prices of particular goods except as they may serve as examples, but rather it is to understand the general nature of all price movements and the principles determining all prices.

The thoro pursuit of this purpose is a large part of the task of economic study.

§ 5. **Demand.** The phrase demand and supply is very frequently used as an explanation of economic problems, without any clear conception of the meaning of the words. Let us examine the meaning and the difficulties of the phrase.

Demand conveys the idea partly of the intensity of the desire of a trader for a certain good, partly of his having something (a certain amount) which he is willing to give for it, and partly of the amount of goods which he desires to buy at the price. Thus we may define: demand is a certain quantity of goods desired at a certain price, united with the power to give the amount of the price in trade for it. Real demand refers to *actual* trade, for demand is *effective* only if desire is backed by the price needed to induce the other party to trade. It is convenient, however, to speak of potential demand as the amount which buyers would be ready to take at some specified price.

The hungry boy looking longingly at the sweetmeats in the confectioner's window, represents mere desire; not until the kind-hearted gentleman gives him a nickel does he represent demand for sweetmeats, and then only in case the sweets are the nickel's worth that he most desires, and not then unless the confectioner is willing to part with the coveted article for a nickel. Demand is actual, desire for a sale-good is effective, only in reference to a certain price, the quantity of the goods which the seller will take for it. We may speak of the intensity of desire, but should say rather the extent (or amount, the number of units) of demand.

§ 6. **Supply.** Supply is the correlative of demand in the phrase, demand and supply; it is the amount of sale-goods which sellers are actually ready to trade at a given price. Supply implies the existence of desire as surely as does demand. Indeed, supply may be defined as desire for a certain quantity of price-goods, at a certain ratio of exchange, united with the power to give sale-goods for them. Supply should

not be confused with the stock in possession. The two may differ greatly, for at a given price a person may choose to offer for trade little or none at all of a good, even tho he has a considerable stock of it on hand. Demand and supply vary as the price changes, but in opposite directions. Demand varies inversely with price (rises as price falls), and supply varies directly with price (rises as price rises).

§ 7. **Limits of advantage in isolated barter.** In barter the trade can take place only within certain limits of price permitting each party to gain somewhat by the choice. The number of units of sale-goods compared with those of the price (each in some specific unit, as pound, yard, gallon, etc.), expresses the ratio of trade (or ratio-of-exchange). When two farmers "trade even," a horse for a cow, either the horse or the cow may be looked upon as the price of the other good, and the ratio of exchange is 1 to 1. But the fact that in trade one thing is equal to the other does not mean that in either trader's opinion the values of the two things are equal. Indeed the very motive of the trade to each party is that he may get what is to him a more valuable for a less valuable object. To even up a trade something may be given "to boot" and one thing be traded for a group of things, as a gun for a boat and a set of fishing tackle, or one rabbit for a lot of 25 fish.[3] It must nearly always be the case that there are several ratios of exchange at which a trader has more or less of a motive to trade.

Where there are only two (or a small number of) traders there is a considerable range for bargaining, or higgling. For example, the owner of the rabbit might be willing to take 20 fish rather than not to trade, and the owner of the fish might rather give 30 fish than go without the rabbit. It is not at all certain that in such a case the trade will be at a ratio arithmetically midway between the extremes. Higgling is illustrated by the old-time American horse trade, in which so

[3] Root means amends, compensation, from the same root as better, best. thus to make good, to even up a trade.

much depends on "bluff"; in such cases it is as important to be able to judge character as to judge horses, for the bargain will be concluded at a ratio of price to sale-good which exactly balances the hope of gain and fear of loss by one of the parties. This same margin for higgling appears in most exchanges between two somewhat isolated traders, even in highly developed business.

The effect that duplicate and additional units of a good have on valuation (principle of diminishing gratification) is the most frequent cause of barter. The owner, in accordance with the principle of substitution, seeks to trade some of his stock of a good (those units which correspond to less intense, direct uses) for goods which he lacks entirely or values more highly. A hunter with a large pack will be glad to trade a part of his furs for a part of the farmer's grain and fruit. He thus gives up the satisfaction of his marginal, less intense desires for furs to gratify his more intense desires for grain and fruit. But (having meat to eat) he would not, at any price, trade for food all the furs he has. Thus, when goods are turned to their trade-uses, new levels of actual valuations for each of the two kinds of goods result in place of those existing before the trade.

It should be clear from this chapter that any true trade must be mutual and voluntary. It thus differs from gift-making, stealing, extortion, taxation, etc. True trade is of mutual advantage to the parties, at least is believed to be so at the moment. It is this which makes trade rational. It is a mode of substituting more desirable for less desirable goods.

A popular idea very difficult to uproot is that if one party to a trade gains the other must lose. This idea was generally held in ancient times and in the Middle Ages, and seems to have been connected with the notion that value is something fixed in a good and unchangeable. This seems to have been one reason for the poor opinion held of merchants, tho the frequency of fraud in trade with strangers strengthened this

opinion. But if goods having a small value may be given a higher value by being traded, trade and the work of merchants, peddlers, and carriers of all sorts, may be a value-increasing process.

CHAPTER 6

MONEY AND MARKETS

§ 1. Money and evaluation. § 2. Origin of money. § 3. The use of money and money-prices. § 4. The standard price unit. § 5. Representative quality of money. § 6. The sale at auction. § 7. Bids in relation to valuations. § 8. Effect of multiplicate units of supply. § 9. Successive price levels through uncertainty. § 10. Auctions with reserve valuations. § 11. Origin of markets. § 12. Transportation and the extent of markets. § 13. Communication and markets. § 14. One price in a market. § 15. Imperfect market conditions.

§ 1. **Money and evaluation.** In the last chapter it was seen why a process of delicate price fixing can not go on in a state of true barter. The lack of correspondence between the amounts of the two goods, makes very exact estimates of the value of goods in barter difficult and often impossible. Therefore, in the earlier stages of society, no careful estimate of value is made by the individual. Children do not make it. The typical trade of the small boy is a "trade even"; Johnny exchanges his gingerbread for Jimmie's jack-knife. It marks an epoch in the industrial development of the boy when he begins to keep store with pins, and no longer trades candy for apples, but both for pins, which have become the means of trade in his boy world. He then can express values in much more exact terms. In our society most children begin early to grow familiar with this conception of some thing used as a means of trading other goods; but travelers find some savage tribes still in the earlier childish stage of development, unable to grasp the thought, or understand the use, of money. When through lack of money there is a failure to adjust valuation, there is a loss of the possible advantage in each trade. There is a further waste of time and of effort to find something

that will be accepted in barter, and the loss offsets a large part of the gain even when the barter is effected.

§ 2. **Origin of money.** These difficulties are met by the use of money. Some kind of good in general use comes to be accepted as a medium of trade. Money is simply one kind of wealth which is taken, not for itself, but to pass along. Each person takes it in the belief that it will enable him to distribute his purchasing power in a more effective way. Money was not an invention, as are some mechanical devices, suddenly hit upon, but it was invented in the sense that the use as money of this or that object grew into a social custom as its convenience was tested by practice. Money is used in some degree everywhere except in the most primitive tribes. Historically viewed, the money first used in any community seems in every case to have been an object capable of giving immediate enjoyment to its possessor: salt, furs, rare feathers, bronze for weapons, silver and gold for ornaments, etc. This valuable good then gradually comes to be used as money, adding to its value-in-use this quality of value-in-exchange.

§ 3. **The use of money and money-prices.** A money-economy is a social organization, or an economic community, where money is generally used as the means of payment, in contrast with a barter-economy where trade is carried on without the use of money. In either case it is a matter of degree, and actually both methods are found in use in any modern community in varying proportions. The numerous problems arising with the use of money in a money-economy make up an important sub-division of economics, which must in the main be reserved for later study. Our present purpose, however, is merely to get in mind a few fundamental ideas regarding the use of money as a standard of current prices.

Goods had value long before such a thing as money was known in the world. All the essential features of the valuation process are possible without reference to money. But the great bulk of the trade of the world is effected through the instrumentality of money (and credit), and prices are nearly

always quoted in money terms. So, altho there may be valuation and even a certain amount of trade (and therefore prices) without the use of money, it is natural for us to look for concrete illustrations of trade and of price to the money transactions which are taking place around us all the time—the familiar purchase of a good for money. Moreover, while the explanation of the more complicated problem of market prices without reference to money is quite possible, it is simplified by having these prices expressed in money terms.

§ 4. **The standard price unit.** In every civilized country to-day, some one valuable metal, either gold or silver, is selected as the standard money material, and a certain number of grains of the metal, of a certain degree of fineness, duly stamped by governmental authority, is the standard coin or monetary unit. This unit in the United States is called a dollar, consisting of 23.22 grains of "fine gold" (or 25.8 grains of "standard gold" nine tenths fine); in Great Britain it is the pound, containing 113.001605 grains of fine gold; in Germany it is the mark, containing 5.5312 grains; and in France it is the franc, containing 4.4803 grains. The coinage of the dollar gold piece was discontinued in the United States in 1890, and gold is coined in multiples of a dollar in quarter and half eagles, eagles ($10.00), and double eagles. Other pieces of metal and paper, properly stamped, are also called dollars, but the value of each of those is always now maintained practically equal to the value of the gold dollar.[1] When we discuss market prices to-day in America in terms of money, we may think, therefore, of the price as being a quantity of gold, some multiple of a piece weighing 25.8 grains.

§ 5. **Representative quality of money.** Buying and selling by means of money is not essentially different from a case of barter in which gold (or other standard money) is one of the two goods in the trade. Except in the rarest cases, the price-good, money, is taken by the seller for its power-in-ex-

[1] By proper safeguards regarding their quantity and their ready exchangeability for gold.

change for other goods, not as metal to be used in the arts. The money is taken for its representative quality (see above, section 2); it represents to the trader the desirability of the things that it can be expected to buy. Money becomes in the thought of the traders something like an algebraic symbol, but it stands for different things and groups of things to different traders, and to each its significance changes from one moment to another, according as he chooses to use it in buying different goods.

When numerous things are bartered, the ratio in one transaction is unrelated with that in another. Tho there might be at the same time and place a hundred acts of barter, as sheep for cloth and wheat for shoes, etc., in large part each act of barter stands by itself in the thoughts of men. There is no common unit of comparison for prices. But if sheep, cloth, wheat, and shoes are each in turn sold and bought with the money unit, money becomes a common unit of expression not only for prices on the market, but for the various individuals' valuations of goods. The habit of comparing goods in terms of money grows, and for convenience men frame their own valuations in monetary terms, as they approach a trade to bid and ask, and buy and sell.

§ 6. **The sale at auction.** Let us now approach the price problem as it presents itself when groups of traders come together, and where bids are expressed in some common unit of price. We will consider first the simplest case of price fixing in a group, that of the auction sale. In auctions on the Dutch plan the auctioneer first names a high price and then successively lowers the price until some buyer takes it. Balancing his hopes and fears, some one bids it in, because he fears that when a lower price is named some one else will take it. In auction sales on the English plan the auctioneer asks, "What am I bid?" and after getting "a starter" he stimulates the desire of the bidders by praise of the sale-goods, keeps the crowd good natured and optimistic by artful story telling, arouses the spirit of rivalry in the bidders, and excites their

fears by skilful threats of "going, going," until, shrewdly watching their faces, he feels that the limit is reached. Then he lets fall the hammer, "knocking the article off" to the "lucky buyer." The auctioneer in all this is himself under some pressure, and the success of the sale as a whole depends much on his skill. He dare not delay long for a higher bid on any one article, for unless the bidders continue to believe that things can be had at low prices (i.e., at less than new goods will ordinarily bring) the interest flags and the crowd melts away.

§ 7. **Bids in relation to valuations.** Note how the prices paid are related to the valuations of the bidders. Suppose that an ax is to be sold at auction, and each one of the ten prospective buyers as he comes to the market has his outside valuation, as follows:

B 10	will	bid	at	highest	20.
B 9	"	"	"	"	25.
B 8	"	"	"	"	30.
B 7	"	"	"	"	35.
B 6	"	"	"	"	40.
B 5	"	"	"	"	45.
B 4	"	"	"	"	48.
B 3	"	"	"	"	50.
B 2	"	"	"	"	53.
B 1	"	"	"	"	60.

When B 3 has bid 50 he has reached his limit and only two other bidders remain. B 2 may then hope to be successful at 51, but B 1 "goes one higher" at each bid until the bid of 54, at which point B 2 drops out. The price in an auction sale is the next unit above the next to the highest bidder's maximum valuation.[2] When there are several urgent bidders for a single article, or for a number of articles less numerous than the bidders, the price sometimes goes considerably above what is "normal." For example, if several farmers in the neighbor-

[2] This may be called the theoretically exact price, under the assumed conditions. Of course inattention, forgetfulness, etc., on the part of the bidders alter the conditions and therefore the price (both theoretical and practical).

hood have lost or sold horses and a horse is offered at auction just as the spring plowing needs to be done, they may bid so eagerly as to carry the price above that for which an equally good animal could be bought in the next county, or in a near-by city. The buyer can afford to pay as much more as the cost to himself of a few days' delay and loss of his time when "time is money." If the normal price is 60, the actual price, which is the market price at that time and place, might be 70 or 80.[3]

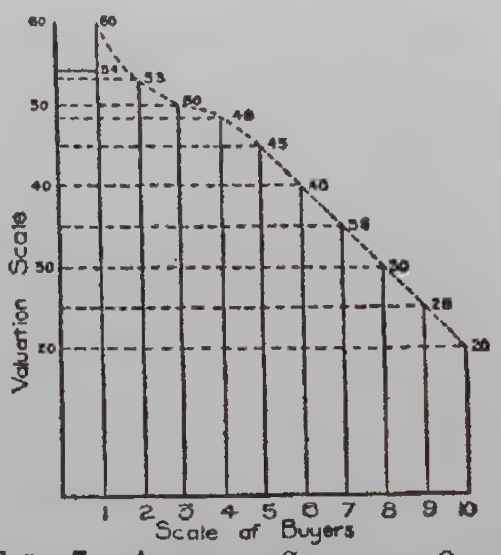


FIG. 7. AUCTION SALE OF ONE ARTICLE.*

§ 8. **Effect of multiplicate units of supply.** Suppose that instead of one ax, there were ten axes, all of about the same quality. At rural auction sales in America, those present look over the articles before the sale begins, and try to find who has come to buy, what they would like to get, and what they are likely to bid. If every prospective bidder judged the situation with entire accuracy, then when there were nine axes the exact price would be 21, just enough to exclude the lowest bidder; if there were eight axes the price would be 26 (and so on up to 54 if there were but one ax).

What would happen if there were ten axes offered to ten bidders and no one else would be tempted to bid at any price, however low (i.e., complete inelasticity of demand at prices below 20)? The first thought may be that the price may be twenty. But we are here coming to the margin of satisfac-

* Let the buyers be arranged in order of the amount of their maximum valuations, from left to right from the intersection of the coordinates. The dotted horizontal lines represent the successive levels of the bids, rising until the price is fixed at 54, just above the next to the highest bid.

[3] This is a case of complementary goods (see above, Chap. 5), the horse being needed to make use of other goods. It also evidently involves time-value, which see later, Part IV.

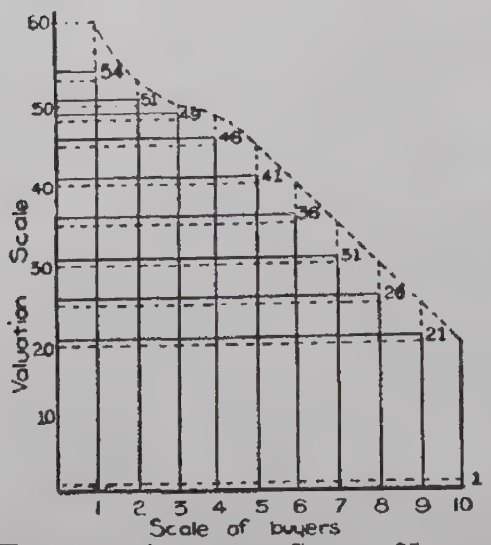


FIG. 8. AUCTION SALE; NUMEROUS LIKE ARTICLES.*

tion of desires where values disappear. If the more eager bidders know the situation and refrain from bidding, each buyer might in turn get an ax for one unit, the smallest possible bid. This is the case when things sell for a "song." On Saturday nights at the produce markets such goods as strawberries, vegetables, and fish will be sold at any price. In fact, it rarely happens that demand is entirely inelastic, for at an abnormally low price each of the more eager bidders may be tempted to get more of the sale-goods than he had expected, and still others who had no thought of buying will do so if only with the purpose of selling later. The man who bought a cheap coffin at an auction because "it would be handy to have in the house" was a bit of an extremist, yet it is proverbial that anything can be sold if the price is low enough.

§ 9. **Successive price levels through uncertainty.** It is evident that a mistake in the judgment of traders must alter the price somewhat with any number of sale-goods. There may be a succession of price levels. When there were ten axes, the first five might sell at close to 40, the next three at close to 30, and the last two at 20; the more eager bidders being uncertain of the number of other bidders and afraid to risk waiting for the lower price. This drop in price is a very

* If each of numerous like articles were put up for sale separately and each were supposed by buyers to be the last, there would result a succession of prices. Each price would be lower than the preceding, each just high enough to exclude the next to the highest remaining bidder. If, however, it was known that there were several like articles but not just how many, there might result a succession of price levels. The dotted curve connects the maximum valuation of the several buyers; successive prices form a curve somewhat lower. A tenth unit would sell only at a price between zero and 20.

common incident at auctions, to the chagrin of the earlier buyers; but the opposite is possible, and bidding may become more spirited and the price rise as the last article is put up for sale.

§ 10. **Auctions with reserve valuations.** An auction is advertised to be "without reserve" when everything is to be sold for the highest bid, no matter how low it is. The seller agrees in advance to have no minimum selling valuation. Price in such a case may be abnormally low, much lower than in a trade where a lower limit is set by the ability and readiness of each would-be seller to keep all or part of the supply if the price is not as high as his valuations. Buyers' bids alone then determine the price at anything above zero. In most cases of trade, each trader virtually stands ready "to bid in" his own goods at his valuations rather than to sacrifice them; and even in some auctions the right is expressly reserved of withdrawing articles for which the bids remain unduly low. In some cases friends or confederates, "cappers," make pretended bids, or sometimes bid in the goods if the price is too low.

§ 11. **Origin of markets.** We have in the auction sale, with its gathering of buyers, something near to the idea of a *market*. In all parts of the world, civilized or uncivilized, are found places where both buyers and sellers of various kinds of goods come together to trade. These meeting places (or meetings) were called markets because they were first found on the border (*mark*) between tribes, villages, or clans, as a common ground where strangers met to trade. The notion of trade did not develop within the family and the tribe. There the idea of common ownership seems to have ruled, and the communities seem to have been led to trade by the abundance or the want of certain natural resources in their environment; thus shore tribes had a surplus of salt and fish, forest tribes had meat and skins, tribes living near good mineral deposits had flints and bronze, while each wanted what the other had. Markets developed on neutral ground whither came buyers and sellers, some of whom became regular mer-

chants. Buyers found a better selection of goods, both as to kind and as to quality, and merchants found many would-be purchasers for what they had to sell. Throughout the Middle Ages purchases were made by the more prosperous husbandmen in great quantities once or twice a year at the fairs or markets. As both buyers and sellers came from widely separated places, the feature of combination (or monopoly) was not common and the conditions of a competitive market were present.

In America as towns or villages appeared where some men could give most of their time to producing something besides food, local markets sprang up whither farmers came to exchange with village artisans. Every little country store in America is in some measure a market, where the merchant trades with the farmer, the townpeople with the merchant, and neighbors with each other. The larger cities become the great markets, toward which are sent all the surplus products of farms and of the mills in smaller cities to be distributed to the consumers.

§ 12. **Transportation and the extent of markets.** Markets are limited by the means of transportation enabling goods to be brought from the place of their origin and delivered to the place of their use. A dense population engaged mainly in commerce and manufactures can be maintained only at points where there are means of bringing in a large supply of food, and of carrying back manufactured goods. The remarkable growth in the means of commerce since the application of steam to water traffic, and the invention of the railroad, have made it possible for goods to be gathered from more distant points.

§ 13. **Communication and markets.** Buyers and sellers need not be physically present at one place, but they must be in communication, so that there can be a common understanding between them. In earlier times, however, there were no easy means of gathering information such as trade bulletins, newspapers, special commercial agencies, and no rapid means

of transmitting intelligence, such as the steamship, the railroad, the postal service, the land telegraph, the ocean cable, and the wireless telegraph. The traders once had to be together at one place in order that each should know what the others were willing to do. All this is now changed and for many purposes men in Paris, in New York, in London, and in Calcutta are separated by only a few moments for trading.

As a result of these changes, the old periodical fairs and markets have almost disappeared, and there has been a widening of the village-market to the markets of the province, of the nation, and finally of the world. While a part of every one's purchases continues to be made in the neighborhood, a greater and greater portion of the total business is done by traders that are widely separated and that are members of a world-market. Various products produced in the same locality may seek different markets. While the market for fruit and eggs may be in the village near the farmhouse, that for most of the wheat of the same farm may be in Liverpool.

§ 14. **One price in a market.** If the many buyers and sellers coming together at a market-place were to meet as isolated couples, without knowledge of the others, the trades would be made at a great variety of ratios, possibly no two trades at the same. But the coming together of buyers and sellers into a single trading group has a remarkable effect on the ratio at which the trades take place between individual buyers and sellers. So far as there is truly a meeting of minds, all the trades taking place at any one time are at the same ratio. It is the essential proof of a true market that there is but one price at any moment. A complete or typical *market* may therefore be defined as a group of closely communicating traders whose valuations, however diverse before they meet, unite for a moment into a single price (as regards the goods actually traded). A typical market exists and a market price results when there is: (a) a group of buyers and sellers; (b) a judgment by each trader of both groups, as to the conditions of the market; (c) free bidding on both sides.

§ 15. **Imperfect market conditions.** When, however, these conditions are not fulfilled perfectly, different prices may exist at the same moment near each other. Retail and wholesale merchants may be purchasing goods in the same room at the same time at very different prices, but there are here two distinct and well recognized markets. Even within what is ordinarily the same market, differences may for brief times exist. On the occasion of a break in stocks, excited traders within ten feet of each other make bids that differ by thousands of dollars; but the expression used to describe this explains the cause: "the market has all gone to pieces." The very essence of the idea of market is the meeting of minds in agreement on a price. Within a group of buyers and sellers thus meeting, one price prevails at least for the moment. The more nearly the actual conditions approach to the ideal of a market, the less are prices fixed by individual higgling, and the more impersonal they become, the buyers and sellers being compelled to adjust their bids to the needs of the market, and being unable to vary them greatly one way or the other.

CHAPTER 7

PRINCIPLES OF PRICE

§ 1. Buyers' composite valuation curve. § 2. Sellers' composite valuation curve. § 3. Price the resultant of demand and supply. § 4. The market as a two-sided auction. § 5. Supply and demand coördinate in price-determination. § 6. Price in a permanent market. § 7. Effect of the market upon valuations. § 8. The point of price-adjustment. § 9. Social factors in individual valuations. § 10. Objective conditions to be studied.

§ 1. **Buyers' composite valuation curve.** We have now to examine the process by which market-price is determined where two groups of bidders are present. This fulfils the conditions of a complete market, where there is two-sided, competitive bidding. Each trader comes to the market with valuations already in his mind more or less definitely. It may be that he is disposed to buy one unit if the price is high;[1] if it is lower he will buy two units; if still lower, three units, etc. Or he is disposed to sell one unit at a certain price, two units if the price offered is higher, three if it is still higher, etc. The situation from the standpoint of the prospective buyers is represented in Figure 9. One of them (B 1) stands ready to purchase one unit at a price as high as 14 if he can do no better, but he will, of course, buy at a lower figure if possible. B 2 will, if he must, pay as high as 13 for a unit. Other buyers[2] are willing to buy (one unit each) at prices

1 This set of valuations with which a trader enters a market reflects a disposition, an attitude of choice, a provisional judgment, which is subject to change with new conditions. See below on social factors in individual valuations.

2 **Elasticity of demand.** The changes of demand (and of supply) relative to a certain amount of change of price are very different ac-

respectively lower—12, 11, etc. At the extreme end of the scale there are certain individuals who would be induced to buy only by a price extremely low—4, 3, 1, etc. The diagram,

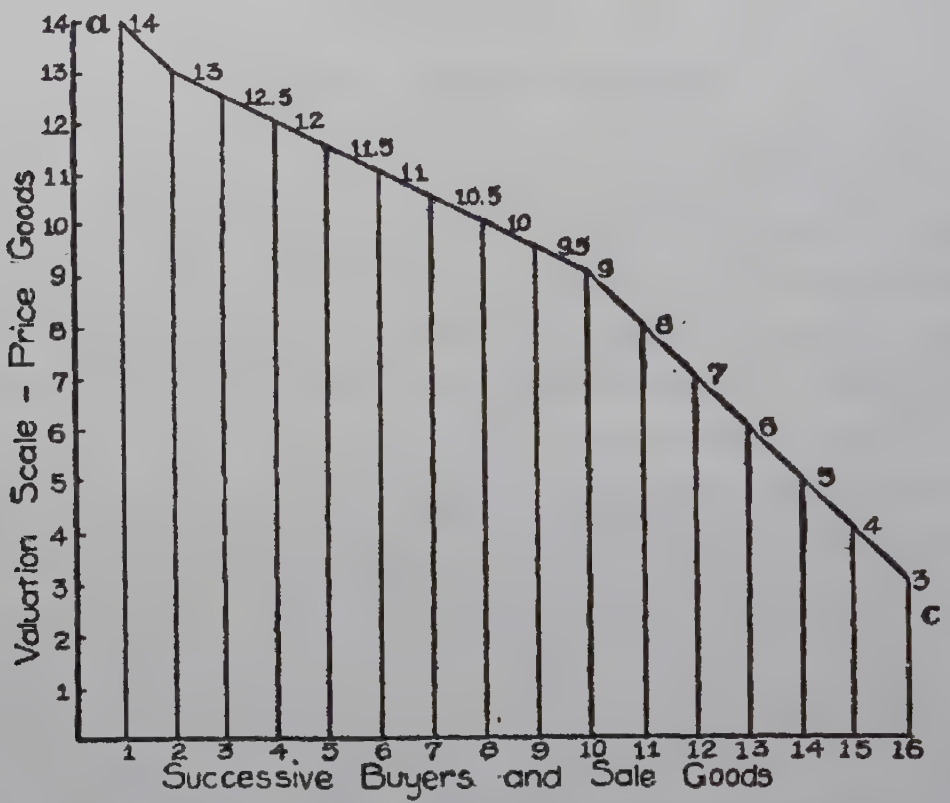


FIG. 9. BUYERS' COMPOSITE VALUATION CURVE.

therefore, represents this situation where the individual (prospective) buyers have different mental attitudes (valuations) as

cording to kinds of goods, to times, and to circumstances. A fall of a particular price by 1 per cent may correspond with an increase of demand by 1 per cent or 2 per cent or 10 per cent as the case may be. When eggs were 35 cents a dozen in Chicago (between 1909–1911) and fell to 34 cents the change in demand was hardly noticeable. But at 30 cents (about 15 per cent less) the demand rose from about 15,000 cases to 30,000 a week (100 per cent),—a considerable degree of elasticity. (The standard case contains 30 dozen.) At 20 cents a dozen demand was remarkably elastic, and additional supplies to the amount of 50,000 to 100,000 cases were taken (probably used as substitutes for meat, and to put into cold-storage) with hardly noticeable decline in price. Later, in June and July, however, when the demand for cold-storage purposes falls off, and possibly because eggs are somewhat less palatable in hot weather, the price fell lower (to 18, and one year even to 15 cents). When at a given price a small reduction in price in-

regards the good in question, and where in the aggregate the whole body of buyers stand ready to take the various amounts indicated, according as the prevailing price is higher or lower. If it is high they will take a relatively small quantity: if it is

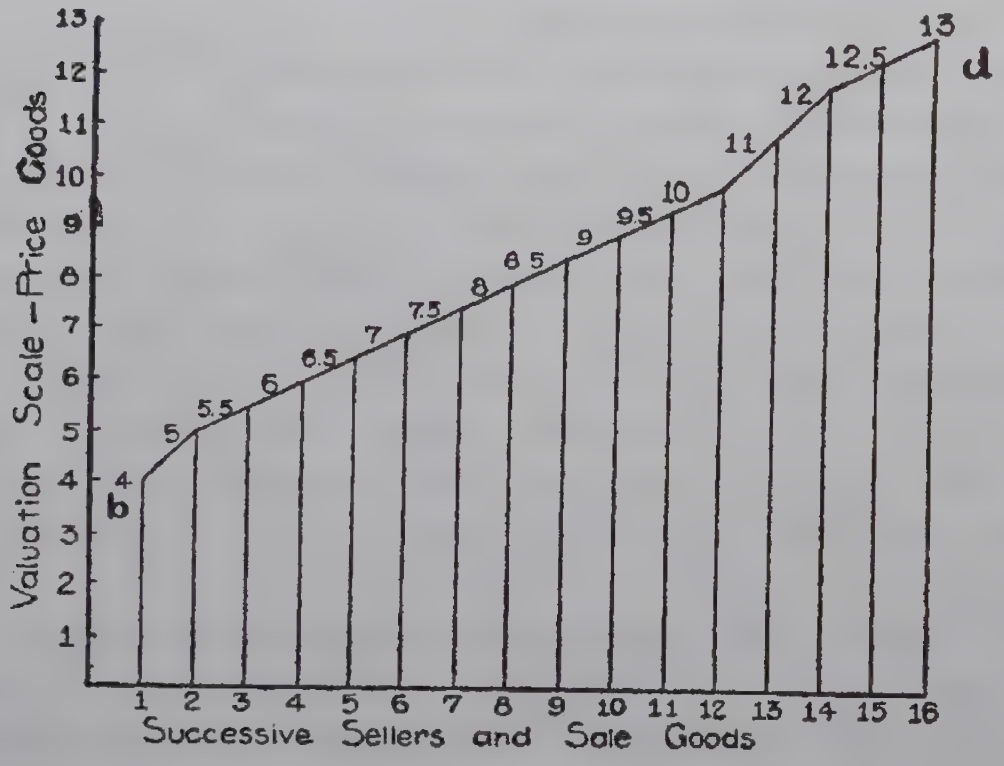


FIG. 10. SELLERS' COMPOSITE VALUATION CURVE.

low they will take a larger amount. If, for example, the price should prove to be 12, it will be seen that only four units will be taken by the would-be purchasers. They will be secured, of course, by the *most urgent buyers,* B 1, B 2, B 3, and B 4. There is no one else who stands ready to buy at a price as high as 12. There are others who would buy at a lower figure, but if the ruling market price is as high as 12 they are, by their own attitude of choice, necessarily excluded from the actual market transactions. Similarly for any other price in the

creases largely the amount that will be bought and sold, demand and supply are said to be elastic. For example, at 35 cents the demand for eggs in Chicago is relatively inelastic, and at 20 cents it is very elastic. See Fetter, Source Book in Economics, pp. 25–33, for description and diagrams of some seasonal price variations in food, from Professor H. C. Taylor's study of the subject.

scale there will be a definite number of included or actual buyers, and a definite amount of the good which in the aggregate will be taken by those buyers *at that price.* This amount, the *demand,* which the buyers will take at any specified price is a composite, the combined result, of course, of the bids of the various individuals concerned.

§ 2. **Sellers' composite valuation curve.** We may show in a similar way by Figure 10 the conditions of supply. S 1, the *most urgent seller,* is willing to sell one unit at a price as low as 4;[3] S 7 will part with a unit at a price of 7.5 if he can do no better; S 12 will not be tempted to sell unless he can get 10 for a unit of the good, etc. Here again the diagram simply depicts the fact that at any given price there will be a certain number of actual or included sellers, and the amount offered by those sellers *at that price,* or the *supply,* will also be a definite quantity. At a low price this quantity is small; at a high price it is large.

§ 3. **Price the resultant of demand and supply.** Our question now is what is the market-price which naturally emerges from the demand- and supply-conditions which we have been considering. If one of these curves be superimposed upon the other, they are seen to cross at the point corresponding to ten units of sale-goods, and to the price of nine per unit. All that the diagram means is that under the supposed

[3] It must not be thought that in the above diagrams B 1, B 2, B 3, etc., are necessarily all different people. B 1, who is willing to pay (if he must) 14 for one unit, may appear again as B 2, willing to buy a second unit, but not willing to pay as much for it as he would for a single unit, or as B 4, B 6, etc. That is, he is willing, like the other buyers individually, and like the group of buyers as a whole, to take a certain sum at a high price, and a larger sum at a lower price. This is in accordance with the principle of diminishing gratification which we have already discussed (ch. 4). Similarly S 1 may enter again as S 2, S 5, S 6, etc. That is to say, each seller (of divisible amounts of goods) is willing to offer more at a high price than at a low price. It is evident, then, that the principle of diminishing gratification lies at the bottom of the demand conditions and also of the supply conditions as they exist in a market at any given time.

conditions of demand and supply (i.e., ten units offered by the sellers, and ten asked by the buyers at the same price, 9), the market-price which actually prevails will be the price (9) at which the demand and supply are equal. It is obvious that

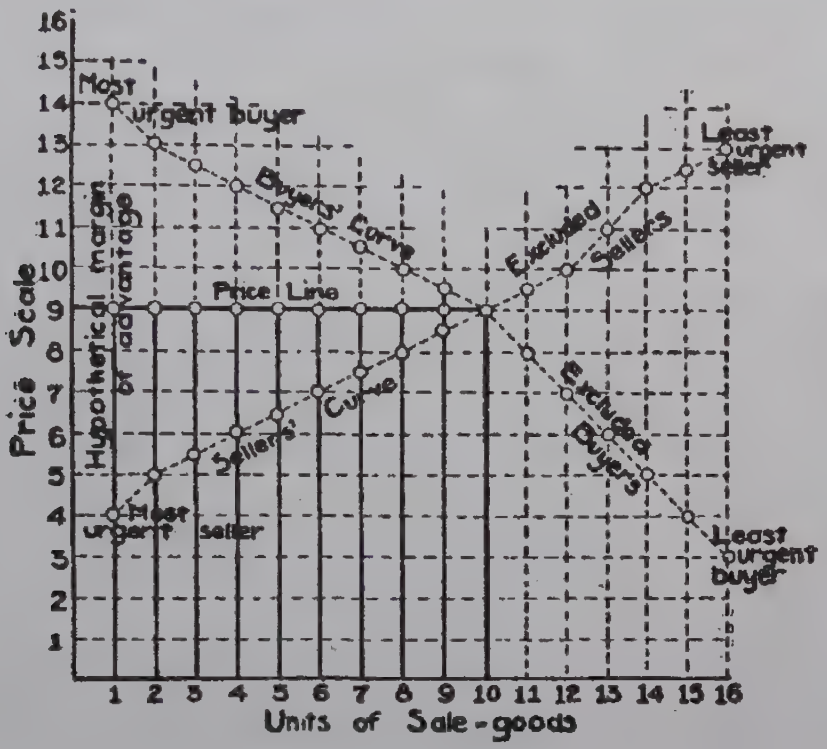


FIG. 11. PRICE RESULTING FROM VALUATIONS.

the number of units bought must be the same as the number sold. At the price 9, there can be and will be ten trades. In each of these ten trades there is some gain for each buyer and for each seller. (It matters not whether the most urgent buyer buys from the most urgent seller.) But not one of the buyers with a valuation less than 9 could trade with any of the sellers with a valuation more than 9. The only way in which any one of these excluded buyers or sellers could get into the trading would be by inducing some one on the other side to act by mistake contrary to his own interest, or from motives of pity or generosity, while at the same time one on the same side fails to act in accord with his own interest.[4]

[4] **Effect of trading outside of the market.** For example, B 11 might take S 8 apart and persuade him to exchange at the price 8, at which both would gain something as compared with not trading at all. But it would be folly for S 8 to isolate himself in effect from the market

It appears then that a logical market-price[5] is that price common to all trades made at the time, which permits the maximum number of transfers with some gain to both parties. This may be expressed also as: that price common to all trades at a given moment, at which no less urgent bidder on either side of the market can trade while any more urgent bidder is excluded. Such a price brings the desires underlying demand and supply to an equilibrium; no buyer is willing to bid more and no seller is willing to take less. It may therefore be called an equilibrium price.

§ 4. **The market as a two-sided auction.** It may be helpful to think of the market as a double auction-sale in which each bidder in either group has in mind a "reserve-price," a valuation at which he will withdraw from the market. Now

in this way. For at that price there would be 8 traders willing to sell and 11 willing to buy. Three buyers able to outbid B 11 must, at the price 8, fail to get into the trade at all. One of them (logically it should be B 10 with a bid of 9) must leave the market without making a purchase (S 10 having a valuation of 9.5). Any buyer from B 11 to B 16 therefore could succeed in getting into the market only as a result of persuading one of the sellers against his own interest, and of outwitting a competing buyer. Similarly, S 11 might get B 9 apart (or any other buyer from B 1 to B 8) and make a trade at 9.5 mutually advantageous (tho not so good for B 9 as he might get otherwise). But at this price there would be 11 sellers and but 9 buyers, and as in the converse case, the less urgent traders would be displacing more urgent traders. Under the assumed valuations any other price than 9 involves the displacing of some more urgent bidder (or bidders) by a less urgent bidder on the same side.

[5] This is the logical, or theoretical, market-price in the sense that it is the price which results when all the assumed conditions are fulfilled. Actual market-price is that price at which a trade is made, and this may vary on either side of the theoretical price when something happens such as is described in the last footnote, some one failing to realize his possibilities. When this occurs there is immediately a new theoretical price and the increase of bids from the excluded, more urgent bidders must send the price either higher or lower than at the last trade. In the example above, where 8 was the actual price on one trade, the next theoretical price became 9½.

suppose it is the duty of the auctioneer to find the correct market-price. He would say, "There are 16 axes here, how many will sell at 7 rather than not sell at all?" At this price there would be six sellers and only six trades possible. The other owners of axes hold them (have reserve-valuations) at more than price 7. "How many will buy?" At this price there are sixteen would-be buyers. Then by successive readjustments the auctioneer might finally fix a price at which the maximum number of trades is possible, that is, the price 9, with ten trades.

§ 5. **Supply and demand coördinate in price-determination.** It should be emphasized that in the foregoing explanation of price, choice must be understood in relation both to demand and to supply. Choice is not peculiarly connected with demand. Demand, like supply, means a quantity of goods which a person chooses to trade at a specified price. Demand is expressed as the number of sale-goods which a buyer will take at the price; supply as the number of sale-goods with which a seller [6] will part. Demand and supply are the same goods viewed in different aspects. A trader can have no demand unless he has a supply of the price-goods to give, and will make no offer unless he has a desire for the other goods. There is no more of the *psychological* element in demand than in supply, and no less of the objective elements (of material goods).

§ 6. **Price in a permanent market.** We have been analyzing the process of price-fixing, starting at a moment when no price existed. Prices must have their origin in this way beginning in a given situation of human desires in relation to the existing fund of goods. But in a much greater number of cases in practical life to-day, price seems to exist in advance of, and apart from, any individual's valuations. Almost every market, like every active business, is a "going concern," closed only at night, on Sundays, and on

[6] Who is also, from the other point of view, a buyer, his sale-goods being the price he is ready to pay.

holidays. Price seems to be a continuous fact, altho there is, properly speaking, no *continuous* price; there is merely a succession of separate prices, as shown by the trades from moment to moment. We watch price change as in a moving picture made up of many instantaneous photographs. Yet each new price seems to grow out of the last price. The opening price each day is usually somewhere near the closing price of the day before, but often somewhat, or very, different as a result of rumors, or of information regarding rains, wars, fires, and countless other influences. The individual trader must take the price at any moment as he finds it. His choice, indeed, is such a small element that price seems to be independent of his valuation. He merely decides whether at that price to buy, or to sell, the same amount as before, or more or less, or none at all, or to bid or to ask a lower or a higher sum. In doing any of these things, however, he not only indicates his attitude toward the market-price, but he exercises his influence upon it. An excluded buyer, if he has anything to trade, shows that he values the price more than he does the sale-good. On the other hand, an excluded seller, the owner of a sale-good, retains it because his desire for it is stronger than his desire for the price (and for the other things which by trade the price represents to him). Trade and the succession of prices appearing are the index and the resultant of the continuous changes in the economic conditions, desires, and choices of the members of the community.

§ 7. **Effect of the market upon valuations.** It is clear that price is the result of the valuations of traders in a market taken collectively; yet as each individual's valuation is looked at separately it seems to be largely determined by price. It is very important to keep in mind that the valuations which are spoken of and represented graphically as so different from the market-price, are not actual. They are merely what *would* be if the individual were not in the market. It was shown in discussing the valuation curve (see Chapter 4,

sections 8-11), of an isolated person, that the higher valuations of earlier units sink in accordance with the principle of diminishing gratification when more like units are added. The actual valuations of all the like units of a present supply are all alike (principle of indifference). Now in a market the individual is in the presence of large new supplies which he can buy at a price. If he approached the market with a higher valuation of the sale-good (in terms of the price-good) than he finds prevailing, he buys, and continues to buy successive units until his valuation of the sale-good has sunk to the market-price, or until his price-goods (purchasing power) are exhausted. So long as he keeps on buying he is bringing his valuation as nearly into agreement with the market-price as he can (with units of the size offered). As he gets more sale-goods their value (in money) falls (principle of diminishing gratification); as his money decreases the value of the other things he can buy with it relatively increases (principle of increasing gratification). When all his money is gone he has desire, but no demand, his valuation is merely hypothetical—what he thinks he would pay if he had the money. This is the state of mind of a large part of the population most of the time regarding most kinds of goods.

§ 8. **The point of price-adjustment.** Picture now a market, let us say a village, to which the farmers of the surrounding country are bringing eggs, butter, apples, etc. The price of eggs to-day is 20 cents a dozen, and at that price just 100 dozen are brought to market and sold. If but 80 dozen a day come to market the price will rise, let us say, to 25 cents. Altogether there must be 20 dozen fewer bought. Who ceases to demand eggs because price has risen only five cents a dozen? Some few wealthier families may continue to buy the same number as before, a few poorer families will stop using eggs entirely, and between these two extremes will be many families which will use eggs a little more sparingly. Now the group of poorest families, which before was buy-

ing some eggs, was just at the margin of choice as regards its whole demand; the middle group was just at the margin as regards a certain part of its demand. In the contrary case, say a fall of price from 20 to 18 cents, many of the families will somewhat increase their use of eggs (substituting them for other kinds of food and packing them for winter use), and perhaps still other families, which could before not afford to use eggs, will now buy some. And so with respect to every good, in a market of any size, there are always persons already buying *some*, who will be ready to buy *more*, and there are others not now buying any, who will begin to buy *some*, at a lower price. At the higher price they are excluded would-be buyers; *in respect to certain quantities*, they are merely potential buyers, but when the price falls they become actual buyers. (A similar view must be taken of the sellers, actual and potential, at a certain price.) Each price is clearly the resultant of all the actual demand and all the actual supply that brings about the equilibrium; but certain units both of demand and of supply are more responsive to price *changes* and are more immediately the occasion in bringing about *changes* than are others. The necessary adjustments of price, of demand, and of supply, are made by those traders who are in a most sensitive, unstable condition in reference to certain units of goods. Therefore our attention in studying price is directed more toward the buyers and the sellers who are just excluded, or are about to be excluded with any alteration of the conditions in the market. When the two pans of a balance are nearly in equilibrium, either a bit taken out of one pan or a bit added to the other will bring the balance to equilibrium. We speak of these bits added or taken away as causing the equilibrium, but we know that this is only on condition that the other contents of the pan are present and remain unchanged while this one change is made.

§ 9. **Social factors in individual valuations.** Men of to-day are accustomed to look to the market-price as in some measure

a guide to their valuations. We have just seen why this must be so, because by trade men are constantly bringing their valuations into accord with that represented in price (so far as they have the purchasing power). But in still other ways, outside of trade and often preceding the actual trade, the influence of other men's choices comes to play a large part in our valuations. Traditional and conventional values, foolish fashions, fads, and imitation of others in very different walks of life and with very different needs, modify and determine our choices. It is easy to see this in every one but one's self. These phenomena are variously spoken of as the mob-mind, the hypnotism of the crowd, suggestion, snobbery, social ambition, idealism, etc. Each of us is so affected by his surroundings, his associates, his education from youth up, that even what seem to be our coldest calculations are based on these more or less fixed and fundamental standards of opinion, prejudice, and preference. Nevertheless, the individual's choice, when he makes it, is *his* choice and helps to maintain or alter price. It will be recalled that from its very beginning choice was impulsive, not rational, and continues to be in a large part guided by habit as well as by impulse. Choice has become in part rational only as primitive impulses have been inhibited, and choice, which is action, has been postponed in view of larger interests.

§ 10. **Objective conditions to be studied.** In the foregoing analysis there is not an *ultimate* explanation of price;[6] we must not think that price is fixed by choice *rather than* by the objective conditions affecting abundance of supply, etc. There is no such contrast between alternative explanations. Each choice is made *in* a given situation; so far as the choice

[6] It is easy "to confuse the idea of natural cause with that of final cause. Science knows nothing of the latter; any natural cause is only a link in the chain of cause and effect; it is itself the result of antecedent causes and the cause of subsequent results." Conklin, "Heredity and Environment," p. 164. This warning of the natural scientist is just as important in the social sciences as it is in biology.

is deliberate it is made *in view of* all the conditions, which include the abundance and scarcity of material things. It is impossible to conceive of choice determining price without having regard to the quantities and qualities of economic goods. In choice, men are at nearly all times touching the world of reality. In price, we see a most significant meeting point of economic forces. The market-price of the moment contains within itself many other problems the solution of which must be sought in a study of natural resources, inventions, machinery, growth of population, ability of men to produce, and many other concrete conditions of industry.

CHAPTER 8

COMPETITION AND MONOPOLY

§ 1. Competition defined. § 2. Naturalness of competition. § 3. Conflicting interests of competition. § 4. Nature of monopoly. § 5. Monopoly not merely scarcity. § 6. Monopoly not merely superior economic power. § 7. Partial competition coexisting with monopoly. § 8. Absolute and relative monopoly. § 9. Motives and germs of monopoly. § 10. Types of monopoly-price: receipts *vs.* profits. § 11. Uniform monopoly-price. § 12. Uniform monopoly-price: inelastic demand. § 13. Uniform monopoly-price: elastic demand. § 14. Discriminatory monopolistic price.

§ 1. **Competition defined.** The word competition is frequently heard and with various implications. Literally it means "seeking-together," with the suggestion of rivalry, of mutual exclusion of the seekers. As applied to trade, *competition* means the attempt of two or more persons to get the same thing, each being guided by his own valuation and not restrained by any outside force. Thus there is an element of competition in the simplest case of barter, for whatever ratio is more favorable to one is less favorable to the other party and gives to one what the other fails to get. But the idea of competition more frequently is applied to a group of traders buying or selling the same class of goods. All the members of the group are thought of as being on one side of the trade, either the buyer's or the seller's side. If in such case there is on the other side but one trader (or some agreement or limitation of competition) there is *one-sided competition.* When there are two groups of competitive traders, one of buyers and one of sellers, there is *two-sided competition.*

§ 2. **Naturalness of competition.** Competition has been

implied in previous chapters in such words as rivalry, emulation, bidding, least eager buyer, or seller, price-adjustment, etc. Competition is spoken of as a force raising or lowering prices, as a motive acting upon the traders, etc., but competition is not a different force, or a separate motive, apart from the desires of the traders. (Some minor exceptions occur where the motive is the mere wish to outdo for the fun of the game.) Rather *competition* ordinarily is but an expression for the situation where each trader is exercising his choice in a market without restraint from others of the same group. For unless there is introduced a new personal factor of collusion, conspiracy, agreement not to bid against each other, the market price will be competitive, and a condition of competition exist. Such agreements, being dependent always on the good faith of the parties, often also on secrecy, and being provocative of jealousies in the division of the gains, are dependent on personal factors, and create a more artificial state of price than is found in competitive price, which has a more impersonal character. Hence competitive prices have, since the days of Adam Smith, commonly been spoken of as "natural" prices. The word natural must, however, be used with caution. It can not be said that the choice any trader makes in entering into an agreement not to compete, when he sees that he can gain by so doing is, in one sense, any less "natural" than his choice of the thing when he competes. The choice might be called natural but the situation and the price resulting are not so, viewed from our present standpoint; they are artificial in the sense that they result from an agreement to abstain from the competition which otherwise would take place.

§ 3. **Conflicting interests of competition.** The buyers have the common interest of low prices; the sellers, the common interest of high prices; and buyers' interest as a group is opposed to sellers' interest as a group. The competition of interests is thus in two dimensions, but competition is applied particularly to the rivalry within the group on either side.

If there are more would-be buyers than sellers (or vice

versa), some on the buyers' side will be forced out by the competition of the others; and even if the numbers are equal in each group, and all succeed in trading, it will probably be at a

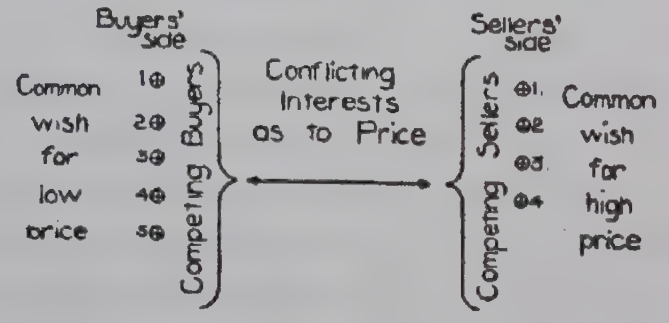


FIG. 12. TRADERS' INTERESTS WITH RESPECT TO PRICE.

ratio altered by the competition. The presence of competing buyers, having different valuations, raises the price at which some sellers will be able to sell and, vice versa, the presence of competing sellers lowers the price which some buyers must pay.

It would always be to the advantage of the traders on one side (say the sellers) if some of their number would cease to produce, or would produce less, as this would raise the price that those remaining could get. Sometimes the rise of price through decreased production is so great that the total price of the whole supply is greater than the total price of the larger supply (and vice versa, in case of increased production). This is the paradox of value applying to a whole market and to the buyers' curve of composite demand, rather than to the individual and to his valuation curve. For example, the total amount of money received by all the farmers of a country for a large crop of corn, wheat, tobacco, cotton, may be less than what would be received for a smaller crop. Abundance is good for the purchasers of farm products, but not always advantageous to the farmers as a class. This appears in the comparison of amount produced, price per unit, and value of the total crop, in successive years; for example, of cotton in the United States. This phenomenon appears frequently in the case of many kinds of products. To the sellers it is very

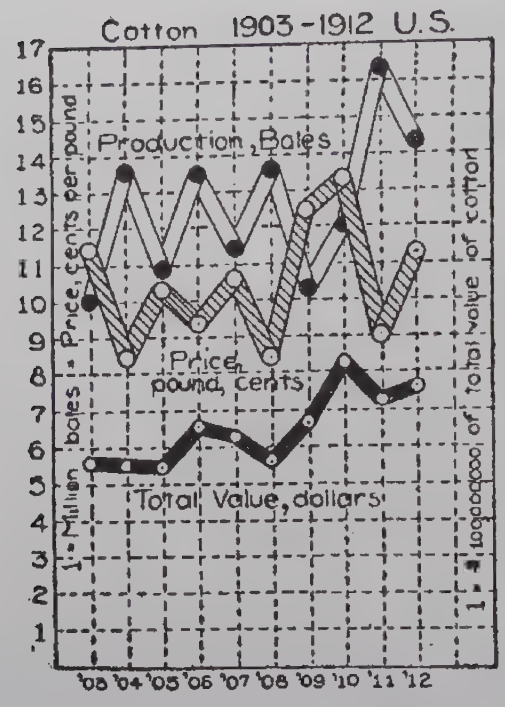


FIG. 13. COTTON PRODUCTION, PRICES, AND TOTAL VALUE.*

disagreeable to get less for a large crop than for a smaller one, and it constitutes a motive for attempting to control the prices to their own advantage whenever they can.

§ 4. **Nature of monopoly.** *Monopoly* is derived from the Greek roots, *monos* (sole, only) and *polein* (to sell), whence the abstract noun *monopolia* (exclusive power, or condition of sale). It originally meant the exclusive legal right of selling some article in some market. The typical monopoly of later mediaeval and early modern times was the power (or person or company granting it) granted in a *patent* by the sovereign. The name patent survives as the special name for the monopoly granted by law to an inventor. Patents and franchises of public corporations, such as street railways, etc., are the main modern forms of legal monopoly. The idea was extended in one direction to include the right to deal in some article, and has been extended in modern usage in another direction to

* In nine changes that occurred (as compared with the preceding year) production and prices moved in opposite directions eight times, and in the other case (in 1910) price rose but little the same year that production increased a little. No doubt cotton prices would have been on a lower level the last few years (1909–1912) but for two factors: (1) The increasing scale of general prices due to gold production, and (2) the increasing population and the corresponding need for more cotton.

In five of the nine changes the paradox of value appeared; three times (1904, 1908, and 1911) when production increased, and two times (1909 and 1911) when production declined; and in still another year (1905), this nearly occurred, for a crop smaller by 20 per cent had a total value only two-thirds of a per cent less than the year before.

mean *economic* power to become (within limits) the sole seller (or buyer) of an article, whether this power is derived from law or springs from the economic conditions. It is applied also to the group of persons, or to the business company or corporation, which has this power. Monopoly, therefore, is essentially opposed to competition, but only within a group on one side of the market, not in the market as a whole. It suggests always the limitation or absence of that rivalry within the group of buyers or of sellers, respectively, which constitutes competition.

§ 5. **Monopoly not merely scarcity.** Monopoly should not be used as synonymous with scarcity. Scarcity is the essential condition of all value. The simplest things—bricks, sand, the commonest unskilled labor—would have no value were there not a degree of scarcity. "Monopoly," whatever else it means, always conveys the idea of some exceptional kind of scarcity due in part to some source or cause not ordinarily present. Many economic writers, for example, have called land-ownership monopoly, saying that land being the work of nature cannot be increased by men, and therefore must always be scarce. Even if it were true that in the economic sense land could not be produced by man, there still would be confusion here between a general class of goods and a special thing. The fact that a particular field cannot be duplicated does not make a monopoly of land as a whole. Nothing can be duplicated exactly, but units very like can be bought of others that will do just as well. It leads to absurdity to use the word monopoly with reference to land-ownership indiscriminately. Neither the humble owner of forty acres of land worth four hundred dollars, nor the owner of a village lot worth a hundred dollars, has any monopoly power. Neither mere scarcity nor the limitation of natural stores should be called monopoly when ownership of like goods is scattered and combination between owners does not exist.

§ 6. **Monopoly is not merely superior economic power.** Neither does the ability of superior material agents and of

skilled workers to secure higher returns than do poor ones constitute monopoly. The free competition assumed in abstract discussions of value does not mean equal capacity or efficiency, but the legal freedom and the personal willingness to move a productive agent into the highest industrial place it is capable of holding. The rocky field does not compete with the fertile one in the sense that it can yield the same uses. The field fit only for potatoes does not compete with those rare and favored localities that can raise the best wines. The gardener earning two dollars a day does not compete with the skilled physician with an income of twenty thousand a year, for he has not the economic capacity to do so; but he is free to compete (as is the owner of the rocky field) unless law, caste, class legislation, social prejudice, or some other objective factor forbids. Anything, however, that prevents the labor or wealth of buyers or sellers from applications for which they are fitted, defeats free competition. To use the term monopoly of any and every limitation of economic ability is to extend it to every case of value. To use it of the high wages of skilled workmen, where no union to suppress competition exists among them, is to make it a colorless synonym of scarcity. It should be confined to a narrower and more exclusive use. Some special kinds of limitation should be connected with the idea of monopoly. The limitation connected with monopoly is not that of economic capacity but that of ownership and control.

§ 7. **Partial competition coexisting with monopoly.** The limitation of competition in the case of monopoly is usually *in some part merely, or on one side of the market.* It is true that a condition of double or two-sided monopoly may exist; indeed, this is always the case in isolated trade, but the typical and important problems of monopoly, in advanced industrial conditions, are those where competition is removed from the traders on one side while it continues to press with full force upon the traders on the other side.[1]

[1] See above, sec. 3, on the conflicting interests of competition.

Monopoly-price, therefore, cannot mean one which is determined without the operation of competitive motives, but one which is determined through their more or less partial and one-sided operation.[2] When monopoly exists the market is not a full or complete one, but competition may still be very active in many respects.

§ 8. **Absolute and relative monopoly.** An absolute monopoly might be said to exist whenever the entire group of traders having control of some kind of goods, on one side of the market, is united to act as one person. This situation rarely occurs and even when occurring is modified by the power of substitution of goods somewhat similar. Monopoly, therefore, is nearly always relative rather than absolute. Monopoly and competition both may better be thought of as *qualities* more or less marking the conduct of traders on either side of a market than as absolute concrete situations. The element of competition is always present in large measure either on both sides of the market or on one side. Monopoly, however, is more likely to occur within the smaller group of traders, while competition is more likely to continue within the larger group, and in varying degrees from the least to the greatest.

Wherever any agreement exists among bidders it makes their action lose, in so far, its competitive, and take on a monopolistic, character, tho this may be very slight and not socially harmful. Likewise the element of monopoly is present among small traders whenever there is but one trader on one side (the buying or the selling side) and he makes a more or less separate bargain, at different prices, with each of the traders on the other side of the trade, forcing each toward the upper limit of valuation.

§ 9. **Motives and germs of monopoly.** As competition is always forcing buyers to bid up, and sellers to bid down against the general interest of their groups, there is an ever-

[2] This caution is necessary as the student will find frequently the assumption that a monopoly-price is not influenced by competition.

besetting motive for monopoly. If two or more of the traders on the same side of the market can get together and limit their mutual competition, they often may gain, tho at the corresponding loss of the other parties. Evidences of this practice appear throughout all the history of commerce.

The germs of monopoly are in any device whatever, that is used to keep any trader from competitively bidding in accordance with his individual interest as he sees it. A group of the most eager bidders at an auction sale may combine and pay the least eager buyers each something to keep them from bidding, and then buy up the whole supply for a trifle. Or all would-be buyers may secretly agree to let one or two do all the bidding and to divide the results. If, on the other hand, the auctioneer has confederates who pretend to buy the goods if the price is not as high as the auctioneer expects, a fictitious market price results, and buyers lose the chance that brings them to the auction, that of "picking up a bargain." An auctioneer often conceals the fact that there is more than one of an article, and having sold it off, brings out a second or a third one of the same kind, thus keeping the buyers in ignorance of the supply and getting somewhere near the estimate of the most eager buyer in each case.[3]

§ 10. **Types of monopoly-price: receipts vs. profits.** These petty devices develop, in the case of larger markets and of many important articles of sale, into the systematic practice of manipulating prices artificially. The explanation of the motives and of the limits of monopolistic price-fixing would best be reserved in large part until a later stage of our study, where it can be considered in connection with enterprise. It is in the sale of the products of a business that the most important problems of monopoly are found. There the monopolist is seeking the highest net gain over a considerable period in the sale of a continuous output of goods. The cost per unit is the minimum seller's valuation and the monopoly-price sought is that which *in the long run* yields the largest gain

[3] See ch. 6, secs. 6-9.

(the product of units of sales times margin of gain per unit). Let us here consider merely the case where the monopoly (seller or group of sellers) is seeking the maximum total price (not net gain) for a stock of goods which have no minimum seller's valuation. Such is the classic example of monopoly in colonial trade related by Adam Smith: "In the spice islands the Dutch are said to burn all the spiceries which a fertile season produces beyond what they expect to dispose of in Europe with such a profit as they think sufficient."[4] We may call this price which concerns the gross receipts from sales, *crude monopoly-price*. It is that which yields the monopolist (with complete control of supply) the maximum gross receipts.

This type of cases is of not infrequent occurrence. Such a case is presented whenever the unsold portion of a supply would go to waste, such as perishable goods after they have come to market (fruits, vegetables, etc.), such as vacant seats in an opera house, at athletic games, etc., where the expense of the whole performance has been incurred and will not be increased by more spectators. This control of all the seats at a single entertainment is a very restricted kind of monopoly, and does not present a social problem. There is still intense competition among artists of all kinds to provide entertainments having the merits to attract spectators.

§ 11. **Uniform monopoly-price.** In all such cases the competitive price would be fixed solely by the buyers' scale of valuation, as in an auction without reserve. If the supply of goods be large, approaching the saturation point of desires, whether there be one seller (without reserve valuation) or competing sellers, the price will tend toward the valuation of the marginal buyer, and in the extreme case may sink to zero. The only way sellers can prevent this is to reserve a part of the supply, even if it has to be burned up or thrown away (fish, fruit, etc.), or remains unused (as the empty seats in a theater). In the case shown (in Fig. 14 and the table)

[4] "Wealth of Nations," Routledge ed., p. 487.

if there were 7 units for sale, the unit price would be 1, the total price 7, and each of the 7 sellers would get 1. But if the owners of these 7 units unite and withhold 3 units, the total receipts are 16, which divided equally, gives $2\frac{2}{7}$ units of price to each seller. It is a general truth, that monopoly power can be made effective to raise a uniform market-price above what it would be if the monopolists competed, only by



Units	Unit price	Total Price
1	7	7
2	6	12
3	5	15
4	4	16
5	3	15
6	2	12
7	1	7
8	0	0

FIG. 14. UNIFORM MONOPOLY-PRICE.

artificially increasing scarcity, by limiting supply. Shown graphically, the maximum crude monopoly-price obtainable is always the largest rectangle that can be inscribed within the coördinate axes and the hypothetical demand-curve. (See above Chapter 4, Section 11, on the paradox of value.)

§ 12. **Uniform monopoly-price, inelastic demand.** With a more inelastic demand,[5] where buyers' demand increases very little with a rapid fall in price, the monopolist must restrict his offers more narrowly to attain a total price above the competitive. In Figure 15 the offer of 3 units would at the price 6 yield the maximum proceeds (18), and any supply below that would be tapping only the lower levels of valuation. If a few valuations are high, and the others fall very rapidly, the price can be raised very much more; as in Figure 15, if the demand curve were AEFG the monopoly-price would be 9. This

[5] Note that as demand means number of units demanded, at a price, an elastic demand means a large change of demand with a small change in price. With given scales of price and of quantities of goods, the more elastic the demand, the flatter the demand-curve.

is the type of demand for articles of great luxury, limited to the very rich.

Units	Unit Price	Total Price
1	10	10
2	8	16
3	6	18
4	4	16
5	2	10
6	0	0

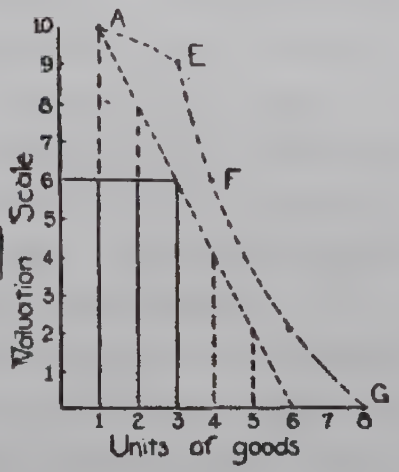


FIG. 15. UNIFORM MONOPOLY-PRICE, INELASTIC DEMAND.

§ 13. **Uniform monopoly-price: elastic demand.** The more elastic the demand the more nearly a monopolistic price approaches a competitive price with a given number of units of supply. In Figure 14 it appears that with any number of units up to 4, the monopolistic and the competitive market-prices would be the same, and any restriction would involve a loss to the monopolist. The motive for monopoly lies in the range of supply of 5 units and beyond. With a more elastic type of demand as in scale A-B (in Figure 16) where there is less difference in the valuations of the most urgent (or capable) and of the less urgent buyer, competitive and monopolistic market-prices are the same up to 7 units ($7 \times 4\frac{1}{3} = 30\frac{1}{3}$ total). With a still more elastic demand represented by a more flattened curve, as in C-D of Figure 16, the competitive and monopolistic price are the same up to 11 units ($11 \times 3\frac{1}{3} = 36\frac{2}{3}$ total) and either 10 or 11 units will yield the same total. Beyond that is the region of possible monopolistic price. Com-

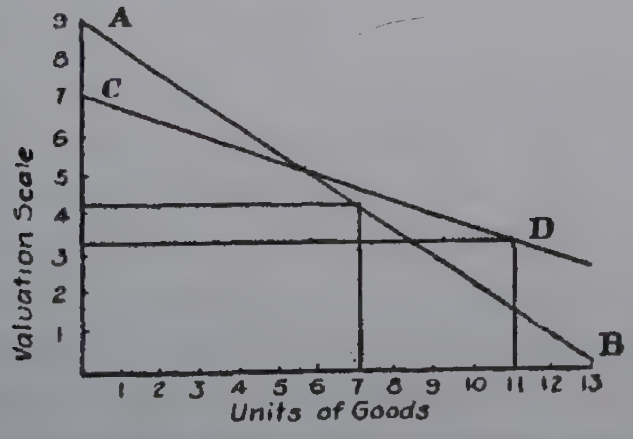


FIG. 16. UNIFORM MONOPOLY-PRICE, ELASTIC DEMAND.

pound types of demand scales, made up of different levels of demand, would further strengthen or weaken the motive to limit supply. If the demand curve, after rapidly falling, flattens to a new broad field of demand, a lower price will yield a larger total than the previous monopoly-price. This is the type of non-essential goods which remain luxuries when price is high, but rapidly become looked upon as comforts and necessities when price falls.

§ 14. **Discriminatory monopolistic price.** It appears from the foregoing that while it is possible for sellers to gain by the fixing of a uniform monopoly-price under some conditions, under other cases it is not. The range of this possibility is, indeed, much narrower than would be anticipated before a study of the problem.[6] But where a monopoly exists, why should it confine itself to a uniform price to all buyers? The very scrutiny of the differences in buyers' valuations needed to fix a monopoly-price, suggests making differences in prices. This fact of practical experience presents the problem of discriminatory monopoly-price. It may often happen that the whole group of would-be buyers may be divided into subgroups, and a different price made for each (see Figure 17). This division may correspond with differences in locality (geographical), as in railroad rates to different places, different prices of petroleum to different cities or states, or different rates to domestic and to foreign shippers on a railroad, etc. Or it may correspond with social ranks, as can be done by making slight differences in quality, the best quality at a very high price for the rich, and the common grades at low prices to the masses. Or it may correspond with the power of different buyers to substitute other goods, or to resort to a different source of supply, the poor in such cases being made to pay more than the rich. Or the distinction may be made with reference to the individual differences in maximum valuations,

[6] It must not be forgotten that our study thus far is limited to crude monopoly-price. The problem is different when it is one of *profits* resulting from the excess of price over cost of production.

only to be known by intimate personal knowledge or by an elaborate system of espionage. This is the extremest possible discrimination.[7]



(a) Group-price discrimination.

(b) Individual price discrimination. Unit prices all different.

FIG. 17. DISCRIMINATORY MONOPOLY-PRICE.

	Unit price	Units	
1st group	5	3	15
2d group	3	2	6
3d group	1	2	2
Total price			23

[7] Thus where the uniform monopoly-price is 4 per unit, yielding proceeds of 16, a group discrimination such as shown in Figure 17, at the left, might yield 23, and personal discrimination, as shown at the right, 28.

PART II
USANCE AND RENT

CHAPTER 9

AGENTS FOR CHANGING STUFF AND FORM

§ 1. Variety in the objects of desire. § 2. Increasing range of choice and use of goods. § 3. Historical view of increasing indirectness of uses. § 4. Goods with indirect uses. § 5. Direct and indirect uses of the same good. § 6. Various changes affecting value. § 7. Agencies for altering stuff or material. § 8. Agencies for changing the form of things. § 9. Natural members as agents in effecting changes of form. § 10. The use of tools by man. § 11. The gradual improvement of indirect agents. § 12. Tools and machines. § 13. The age of machinery.

§ 1. **Variety in the objects of desire.** It has been shown that market-price rests on, or results from, valuations; and that valuations are the reflection of the choices made by men among the objects of their desires. These objects are of the most varied nature, and are capable of the most varied uses. The desires for these uses of goods, to which the explanation of price has been traced, are neither fixed nor simple things. They change from moment to moment and are the resultant of man's whole nervous constitution, of his education and his social surroundings, and of the objective environment in which he finds himself. The features of the environment which are of the greatest import in affecting the strength of desires are the kinds and quantities of goods and the conditions under which they are to be had.

Every valuation, as it involves a comparison of two things, implies some regard to the conditions of supply. Every process of comparison as we have seen (Chapter 2) is more or less a matter of impulse; but it is generally likewise more or less a matter of calculation. The range of a man's choice is more or less far sighted in accordance with the range of his intelligence, his experience, his knowledge, and his forethought. To

appreciate more fully the various sorts of relationships which exist between things and the desires of men, we should now make a further study of economic goods to see what are the conditions affecting both their quantity and the mode of their uses.

§ 2. **Increasing range of choice and use of goods.** The simplest form of life known to us, a unit of protoplasm, reacts in certain ways to the things it touches, reaching out to absorb some and withdrawing to escape others. This quality in the cell of living matter is the most primitive aspect, or element, in economic choice. As organisms develop, they become capable of reflex action, a muscle being moved as a nerve is stimulated, and thus action becomes more and more complicated, developing from simple reflexes to instincts and finally to judgments and to calculated courses of conduct. Every increase in the complexity of nervous structure increases the complexity of a creature's environment. The creature is in touch with more things and in more ways, and is adjusting its life to these things and the things to its life. This means making more and more indirect and complex valuations.

With man this process had already, at the dawn of history, attained a much higher stage of development than it ever has had in the case of any animal. This is shown by man's use of fire, tools, dress, houses, domestic animals, etc. The process became greatly hastened through the invention of more elaborate tools and more complex and efficient ways of doing things and by the development of tastes and habits of life, requiring more and more material objects as conditions for their continuance. It is obvious that in our modern civilization man has become dependent upon the uses of things in more complex ways than ever before; but further study and analysis are needed to enable us to see more clearly the real nature of this relationship between goods and man's desires.

§ 3. **Historical view of increasing indirectness of uses.** Now the relationship of goods and their uses to desires presents several important aspects, the first that we shall consider being

that of technical relationship, or directness of use. The reader will recall at this point what was said (in Chapter 3, sections 11, 12) on the direct, present uses of goods. It is goods of this kind in our economic environment to which men first give attention. This narrow circle of our economic environment, however, which is in immediate relation with psychic income, is surrounded by broad zones of goods less immediately related in time, or in space, or in mechanical working. It will aid us to see the conditions more clearly if we take a historical glance at the development of man's command over his economic environment.

Primitive man had a very scanty stock of goods, the uses of which were direct—food, ornaments, clothing, a hut, etc.—and he had another scanty stock of goods with uses less direct —indirect or instrumental goods, such as his weapons, tools, dogs and horses to be used in the chase, etc. From very early times men have been discovering more indirect yet more effective ways of doing things so that they could get more direct goods, or better goods, or could get them with less labor, or in more agreeable ways. A poor man to-day may enjoy the use of a large variety of goods (some being his own and a much greater mass belonging to others), while the modern man of "means" brings about the gratification of his desires by the agency both of a great amount of goods with direct uses and of a great number of goods with indirect uses. Society as a whole may be thought of to-day as in the situation of a man of means.

Man alone regularly makes use of external objects as indirect agents to get what he wishes—not using merely his own bodily members. Primitive man saw the cocoanut hanging above his head out of reach. When he picked up a stick to throw at the branch, the nut was removed one step from attainment, the stick was an economic good with an indirect use. Slowly through thousands of years the processes of industry have come to involve more and more steps or links. The Indian with a crude knife fashioned his bow and arrow, fastened the

flint and cord which were the outcome of still other processes of industry, and shot the bird which satisfied his hunger. To-day in many cases it is only at the end of a long succession of technical steps that men attain the objects which directly yield the uses they desire. They take the indirect way of doing things not because they prefer indirectness for itself, but merely because experience has taught them that it is the easiest and the most effective way of getting what they desire.

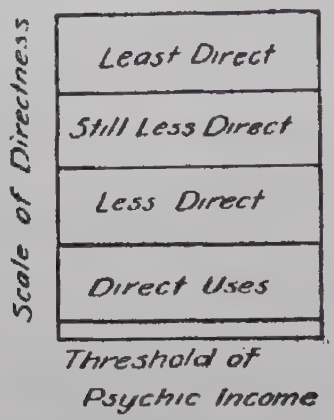


Fig. 18. Degrees of Directness of Uses.*

§ 4. **Goods with indirect uses.** Some of these goods with indirect uses are so near to having direct uses that we hardly recognize that they do not have. It is the draft of air rather than the fan, which is the direct cause of the pleasant coolness; the fan is a necessary indirect agent. It is the air-waves striking on the ear which cause the agreeable sound, while the violin, the bow, the skilful hand, are agents one step removed mechanically.

In a multitude of cases the concrete, direct good and the thing valued simply as an agent to get it, are only a single step removed from each other. The land and the trees in the orchard are agents to get the fruit of the harvest; the spinning machine and the loom are agents to make cloth. Again, the good may be removed by many steps or processes from psychic income, much as in the story of the house that Jack built: the charcoal heats the fire, the fire melts the iron, the iron forms the hatchet, the hatchet cuts the tree, the tree forms the boat, the boat is used for catching fish, the fish is used for food, and that is the cause of man's desire for everything that

* Psychic income may be represented as a narrow band at the base. Some direct uses are constantly being transmuted into psychic income. In turn many of these direct uses result from somewhat indirect uses, these in turn from more indirect uses, and the value of each and all of the whole series of uses rests ultimately on this basis of psychic income.

went before—charcoal, fire, iron, hatchet, tree, and boat. Again, several objects may be complementary agents, that is, may be needed together to obtain one direct use, as the charcoal and iron and some other tools must be brought together to make the hatchet; the boat, a pole, a hook, and bait must all be used together to catch the fish.

§ 5. **Direct and indirect uses of the same good.** Many goods yield at the same time direct and indirect uses for the same or for different persons. The pitcher on the table as an ornament pleasing to the eye is of direct use, while in holding the water to quench our thirst it is of indirect use. In many other cases the one thing has two or more kinds of uses at once, and the proper distinction is that between direct and indirect uses of a good, rather than between direct and indirect goods. The wagon carries a load of produce to market and a happy family to the circus at the same time; a train may carry both passengers and freight; a stove may warm the room and at the same time cook the dinner, etc. Again, the good may be used indirectly at one time and directly at another; the horse which plows the field to-day may to-morrow draw the owner's carriage. In still other cases two or more uses, either direct or indirect, are possible, but are mutually exclusive: the tree may be kept to bear fruit, may be burned as fuel, turned into lumber for furniture, or used to make a workbench to be used to make still other goods.

Directness, like valuation, has relation to some one person in each case. There are many things, commodities of trade, which in their physical substance and form are ready to be used directly, yet which in the course of trade are still indirect goods to their possessors. As yet they are merely the means of earning a business profit (have an indirect use), but they will later render direct uses to the final consumer.[1] Retail and wholesale stores, cold storage and other warehouses, are filled with goods of this kind.

[1] This peculiar case is personal, "contractual" indirectness, resulting from a legal contract between men.

Such facts as these make it clear that concrete goods can not be rigorously classified as either direct or indirect. Any particular good may under different circumstances be used either directly or indirectly. Therefore, the classification of directness and indirectness applies properly to uses rather than to goods, and it is a matter of much importance in our study of economics to keep this thought clearly in mind.

§ 6. **Various changes affecting value.** Desire is directed upon concrete goods, but in the logical view it is all the uses together which, as experience corrects false impulses and hopes, constitute the cause of all the desires men have for the objects and forces of the outer world. Nothing which is not in some causal relation, near or remote, to desire, has value. The vine which Tantalus is unable to reach magnifies his misery. A captive, chained to a rock, gets uses only from the things within his reach. Men living in savagery and ignorance starve amid the possibilities of plenty. Chained by their incapacity and by their improvidence to a little spot of earth, they do not see clearly, either in time or in space, the economic relations about them. Men begin by valuing goods for their direct uses, but the valuation comes to be extended over all the goods having indirect uses, which by instinct, experience, habit, association of ideas, etc., have come to have a connection with desire.

The nature of the uses rendered by goods may be considered here in connection with the thought of the four aspects of choice as already suggested.[2] It was seen there that choice presents itself in one of four aspects, a preference for a kind of goods (stuff), for goods of a particular form, or at a certain place, or at a certain time.

Now the various uses which are accomplished through the indirect instrumentality of goods may be divided into four general classes: (1) stuff changes, (2) form changes, (3) place changes, and (4) time changes. The blast furnace helps to convert the ore into pig iron. The sawmill cuts the log into

[2] See note on Aspects of things chosen, at end of ch. 2.

boards. The steamship carries grain across the ocean. The greenhouse hastens the growth of flowers and vegetables so that they may be brought earlier to market.

It is almost needless to say that such changes have results in the realm of value. For the increase in value which is expected to result from these changes, of course, gives the motive for bringing the changes about. If grain were not, to some one, more valuable in Liverpool than in New York there would be nothing to gain in shipping it three thousand miles across the ocean. If the log were as useful as the boards, the labor and materials put into the sawmill could be turned in other directions.

It must be observed, however, that all four considerations —stuff, form, place, and time—are factors that enter into value whenever value exists. If a particular thing has value, that value is due partly to its composition, partly to its form, partly to its being where it is, and partly to its being available at the particular time. A change in any one of these factors might bring about a change in the value.

§ 7. **Agencies for altering stuff or material.** Man can not create a single atom of matter. He must work with the materials which nature puts at his command.[3] In what sense, then, may we say that man can change the stuff or material of which things are composed? There are many chemical and biological processes instituted by man which bring about changes in the chemical content and material composition. One of the most important ways in which man makes alterations of this kind is in tilling the soil. The farmer plants the seed in carefully prepared ground in such a way that the proper conditions of air, light, and water permit plant-growth, and cause the regrouping of the chemical elements of the soil into new forms of organic matter. The first rude cultivation of the soil was a step beyond the achievements of any animal. It meant the purposeful increase of the kinds of stuff man desired, by a method very different from the

[3] Refer to ch. 3, sec. 1, on Inherent physical nature of things.

gathering of honey by the bee or the hoarding of nuts by the squirrel.

Another important way of making changes in the composition of materials is by breeding and raising domestic animals. Animal growth transforms the food elements into new substances, such as wool, hides, furs, feathers, fat, eggs, bristles, etc. Still another way is seen in the chemical processes of manufacturing, such as iron smelting and other metallurgical operations, tanning, the dyeing of clothes, and the preparation of food as in baking, fermenting, distilling, etc.

To make possible all the changes which man desires in the composition of things, an enormous equipment of indirect agents must be permanently maintained—such things as cultivated soil, agricultural implements, seeds, animals, fertilizers, chemical agents, vats, caldrons, furnaces, fuel, etc., etc. All these things are of value to man (among other reasons) because of the changes in stuff or material which they help to bring about.

§ 8. **Agencies for changing the form of things.** The alterations in the materials of which things are composed that do not involve chemical or organic changes may be classed under the heading of changes of form. It is probably best to class here most of the operations in the so-called extractive industries (other than agriculture). Such are the processes of mining or of quarrying in which organic or mineral materials are blasted, dug, or broken into sizes and shapes convenient for removal; and the process of forestry in which timber is cut and prepared to be taken from its place of growth. There is always, however, a considerable amount of place change involved in these processes. Here, certainly, with form-change may be classed the grouping or arranging of things in new physical relationships—such mechanical operations, for example, as cutting, sawing, splitting, grinding, putting together with nails, screws, or glue, roughening, polishing, etc., etc. Changes of this sort—as well as chemical changes—play a large part likewise in the processes of agri-

culture; for example, in plowing, in hoeing, in cutting grain, in trimming trees, and in shearing sheep. Some of the most familiar and typical instances are found in manufacturing establishments, such as sawmills, planing mills, and factories for shaping wood, iron, leather, clay, and other materials. A large part of the preparation of food involves changes of this kind. The performance of all these operations involves, of course, an enormous equipment of indirect agents—in the home, on the farm, in shop and factory. This includes a large part of the stock of tools and machines, tho many of these are used also in effecting changes in stuff, place, and time.

§ 9. **Natural members as agents in effecting changes of form.** In the course of evolution animals have developed special organs which enable them to bring about changes in the form of things. The foot, the paw, and the tail, subserving largely the purposes of locomotion, are also of use in making physical changes in the environment. Animals have teeth to crush and cut; claws and nails to scratch and tear, pick and bore; hoofs to strike; horns and tusks to pierce, push, and crush. The sword of the swordfish, the proboscis of the mosquito, and the trunk of the elephant are highly specialized organs for acting upon the environment.

Compared with many animals man is in many respects poorly equipped with such natural weapons and agents. The human hand, however, is perhaps on the whole the most adaptable and effective agent which nature has produced.

§ 10. **The use of tools by man.** Man is the tool-using animal. The intelligence which directs and guides the hand has enabled man to contrive external agents of the most marvelous ingenuity and power. The first tools, as is shown in every anthropological museum, were but natural objects taken to increase the efficiency of man's body in acting upon the outer material world. These first inventions were evidently hit upon almost by chance, and yet probably not without some dim perception of the fitness of indirect means to attain the ends desired. The stone held in the hand multiplies many fold the

force of the blow. The chance piece of sharp or jagged flint is vastly more effective than nails or claws in cutting and tearing. Boulders and stones shaped by nature or very slightly modified were the first rude hammers, axes, and knives. The log used as a roller under a heavy load seems to have been the earliest form of the wheel.

Even such primitive appliances greatly extended man's control over the world about him. With the stone ax thrown from the hand he could kill animals in full flight. The spear enabled him at a safer distance to kill some of his most dangerous enemies. The bow and arrow and the use of fire must have made his supremacy far more secure. For thousands of years, however, the first tools changed but slowly. It was difficult to get beyond the simple, natural implements picked up by chance.

§ 11. **The gradual improvement of indirect agents.** In the course of centuries tools and weapons gradually became more efficient. Flint and stone forms were copied in bronze and in iron. Their number and variety steadily increased. Better and more numerous hammers, axes, spears, bows, and arrows were made. Domestic animals were increasingly utilized for food, clothing, and for the carrying of burdens. As a rule the stocks of goods with indirect uses accumulated by primitive man differed little in physical character from his goods with direct uses. Many of them, indeed, were things having alternative uses, some direct, others indirect. It is likely that horses were used to carry men on their backs long before they were taught to carry other burdens or to draw heavy loads. The weapons of the chase were as much a means of sport as a means of securing food, and such things as clothing, tools, and weapons, and even horses and slaves, seem to have been regarded by primitive man as agents to use directly for enjoyment rather than as merely indirect means of getting other goods. This attitude of mind probably helps explain the custom of burying such things with the owner in his grave—a practice which greatly hindered progress, as it

kept the primitive community in poverty. Where such customs were not in vogue man's control over his environment developed through the gradual increase in his instrumental equipment from generation to generation.

§ 12. **Tools and machines.** It is not easy, perhaps not important, to draw a sharp line of distinction between the machine and the tool. Tools are portions of matter, such as bone, wood, iron, which man guides and directs in applying his energy to things. The simple hoe held in the hand and moved by man's own strength was attached to the beast of burden and became a plow or harrow, still guided by man. A machine may be defined as a mechanical device by which power is applied in an automatically repeated manner, to change the place or form of things. A machine may be moved by the foot, but the hand is the great tool-using member. A simple, single piece, that can be taken into the hand, as a spade, a hammer, a knife, is clearly a tool; a combination of parts, such as wheels, levers, pulleys, etc., moving upon each other, is clearly a machine. It is doubtful whether the plow should be called a machine. The simplest machine is but a slight adaptation of the tool, by which power may be applied in an automatically repeated manner. The drag develops into the cart, a simple machine. The spinning stick, a tool used in ancient times, developed into the Saxon spinning-wheel of the sixteenth century, the form used when America was colonized. Wind and water were made to turn wheels to supply the power for moving tools, to grind the corn, and to lift the hammer too heavy for man's strength. The use of power derived from nature, while not the most essential mark of machines, is the most characteristic feature of their modern development. Hand machines, such as the handpress and typewriter, have had important industrial results, but it is the use of power that has led to the results of greatest significance in recent times.

§ 13. **The age of machinery.** Inventions, new machines, and new processes, tho not frequent, were not unknown in the

Middle Ages; but no one class of machines took possession of whole fields of industry. The great industrial changes in the Middle Ages generally grew out of political changes, or of changes of routes of trade whereby large industries were disturbed, or of changes in the use of land through new methods and the bringing into use of land in other places. The industrial changes in England at the end of the eighteenth century, and a little more tardily throughout western Europe and the United States, on the contrary, were due mainly to great mechanical inventions. The age of machinery is, therefore, said to begin with the eighteenth century. The development of the textile machines for cotton and wool spinning and weaving marks the beginning of the movement. Here for the first time were inventions in such numbers, of such a nature, and under such conditions that they were rapidly and widely applied, affecting the lives of a great number of workers. The steam engine at the same time opened up the long line of mechanical inventions by which wood and iron are shaped and wrought, and the iron industry underwent notable developments. Since that time have taken place in all western countries that rapid expansion in the use of machines and those notable changes in industrial organization which distinguish our era from all others.

CHAPTER 10

AGENTS FOR EFFECTING CHANGES OF PLACE AND TIME

§ 1. Transportation. § 2. Location as an element in value. § 3. Relation of time to value. § 4. Indirect agents for hastening the uses of goods. § 5. Agencies for postponing the uses of goods. § 6. Increasing control of man over nature. § 7. Natural diversity both of direct and indirect goods. § 8. The improvement of technical processes and methods. § 9. The economic test of technical improvements. § 10. The psychology of indirect valuation. § 11. The element of time in the valuation of indirect agents.

§ 1. **Transportation.** The third way in which change can be effected by the indirect use of agents to bring objects nearer to the state of fitness to be direct goods, is by moving them from place to place. Indeed, it has been said that all of man's part in stuff- and in form-change can be reduced to the changing of the place of things so that they may be acted upon by each other. Yet there is a distinction between the changes in form and in stuff, just considered, and the change in place, here indicated. Change of stuff is arranging things so that there is a readjustment in their internal composition; change of form is applying tools and forces to alter the shape of the objects (often by combining them with other objects); and change of place is the movement of an object, as a whole, in space to bring it to a different location. Two or more of these changes may be combined. Felling a tree is both a form and a place change, sawing it into boards is a form change, hauling it to market is a place change, carving it into furniture is a form change. When the thing thus moved, or enabled to move, is the man himself, the object that aids is a direct good. Such is the fallen tree bridging the stream, the floating log which saves the man from drowning, the boat on which he rides on

the water, the horse carrying its rider, the sled drawn by dogs or by reindeer. When the agents are used to aid in the movement of other goods their uses are indirect.

The means of transportation have had a long and complex development. They compose to-day a mass of equipment comparable in extent and importance with the agencies that are used to effect changes in stuff and in form. The floating log has been replaced in turn by raft, canoe, sail boat, and steamship. The natural waterway has, where necessary, been deepened and widened, or has been artificially extended by canals, some to connect rivers and others to unite the waters of the oceans. The early trails through the woods have given place to wagon roads and to railways. The heavy ox carts have been succeeded by wagons, railway cars, locomotives, automobiles, and flying-machines.

§ 2. **Location as an element in value.** From the first, of course, all these agencies must have been more or less vaguely recognized as useful and their results as valuable. The relation between location and value, however, tho obvious and simple in many concrete cases, has as a matter of general theory proved difficult of comprehension to a great many minds. Even careful thinkers long found it easy to attribute great importance to operations such as those of agriculture which appear to bring something physical into existence, yet to misconceive the nature of the changes made in value through manufacturing and transportation. This was the error of the eighteenth century economists of France—known as the Physiocrats—and it has been a recurrent error ever since. It seems to be naturally easy for men to conceive of value as inherent in things rather than as resulting from a relation between things and men. Yet the truth is so obvious that physical proximity is a very significant element in value. The treasure chest which is lost forever in the depths of the ocean has become and will remain utterly worthless to man. Brought to shore, where the treasure could be used, it might be worth a fabulous amount. So anything, to be of the greatest value,

must at a certain moment be close at hand or at the right place. Clearly then those various agencies which move things from one place to another the better to meet the consumer's desires, must be regarded as contributing factors in the value of the direct use obtained.

The logic of the matter is quite plain in the light of biologic evolution. Movement is necessary to the existence of animals. The animal, in the order of evolution a higher form of life than the plants, which are more fixed, goes to seek food and in so doing opens up a wider range of choices in life. With few exceptions the only way in which animals can better their economic environment is by moving themselves to a place where goods are more plentiful. In this matter of locomotion the birds have attained the highest point in evolution. Man, while he has by mechanical means greatly added to his own powers of locomotion, has also developed to a very high degree of perfection his ability to move other things. He transports them to the places where they can best serve his purposes, and by this means he adds enormously to his income. Transportation is thus one of the earliest and most natural of the ways in which man increases his income, and the elaborate equipment which he has developed for the transportation of goods finds its economic uses in the gratification of human desires. The subject of transportation, with its various ramifications, furnishes some of the most interesting problems of valuation with which the student of economics has to deal.

§ 3. **Relation of time to value.** As the days and hours succeed each other in the life of man, they bring with them a constant succession of desires, forming an endless stream as long as life itself endures. To meet and satisfy these desires a corresponding stream of goods is necessary. (See Chapter 3, section 10.) Nature furnishes man with the raw material for this stream of goods, and even to a limited extent provides fruits and other things all ready for direct use. But in combining and using the agents at his command, man must give much thought and effort to the end that the direct goods may

ripen at the particular time when the need for them arises. All desire is related to a particular point of time, and man, in a variety of ways, controls the time at which the uses of goods become available.

One way in which this control is exerted is through the simple process of saving goods for future use. If the goods are durable, a present surplus, or even things which answer to strong present desires, may, if the claims of the future make a sufficient appeal, be reserved for use at some later time. Choices of this sort between present and future are constantly being made, and constitute an important aspect of our economic activity. A new machine may be driven twenty thousand miles in the first year, with a large resulting depreciation, and large expense for upkeep. Or its use may with care be extended over a number of years. The family may spend its full yearly income, or lay aside something for the future. The business man may work long hours to accumulate a fortune in his early years, or he may take more leisure and enjoyment as he goes along.

All the decisions in such cases depend on one's mental attitude, one's habit of life, toward present and future. Men differ greatly in this respect, ranging all the way from the spendthrift to the miser. At a later point in our study we shall have occasion to inquire more deeply into this matter.

§ 4. **Indirect agencies for hastening the uses of goods.** Our present concern is with the use of indirect agents for the purpose of controlling the time at which the uses of goods become available. Man contrives agencies both to hasten and to postpone the processes of nature, and thereby makes goods better or worse for his purposes. Greenhouses are built and equipped with heating apparatus in order to produce early vegetables and flowers; incubators and brooders are employed to provide the market with the tender broiler earlier in the season than the mother hen would do it; apparatus for making artificial ice is operated in the summer time in places where ice is sure to be a free good a few months later; southern

fruits and vegetables are shipped north by fast freight to places which within a few weeks will have an abundant supply of their own home-grown produce. In all these cases the thing that man is striving to do is to make things available at an earlier point of time. And he employs a very considerable amount of apparatus (indirect agents) to accomplish his end.

Likewise the time of indirect uses may be hastened by the use of other indirect agents (of "lower rank"). The sapling is planted in the forest to hasten the process of nature in growing wood to be used in industry; the drying-kiln makes it possible to use the lumber newly cut; gas and electricity lighting the factory make possible overtime work to fill rush orders; fuel is burnt in the locomotive to bring to the factory the materials needed just then. A large part of the transportation by express is to bring machinery and supplies to the factory when urgently needed, and hundreds of dollars have been paid thus for the shipment of a single machine across the continent, when a few dollars would have paid the cost of shipment by slower freight.

§ 5. **Agencies for postponing the uses of goods.** Of as great importance perhaps are the various agencies for keeping goods in proper condition for use at some future time. Grain is regularly kept for months in barns and elevators where it is protected from the weather. Fruit, vegetables, dressed poultry, and other meats are preserved in refrigerators and cold-storage plants, and fruits and vegetables are also kept fresh by chemical means or by being "canned" in jars or other vessels from which germs are excluded. Large stocks of building materials and other things not ordinarily spoken of as perishable are nevertheless kept under roof to safeguard them from the elements. In some cases the indirect agent is many steps removed from the final gratification of desires. There are factories employed in making paint, cement, creosote, pitch, tar, roofing, etc.—things destined to be used in turn to make, repair, or preserve structures which shelter stocks of other indirect agents for uses that are still in the more or less dis-

tant future. There is method, of course, in the whole complex process. The end finally achieved is the production of "direct" goods at the particular time when they are most desired by men.

§ 6. **Increasing control of man over nature.** The technical processes of industry have been growing more complex, and the stocks of agents used in these processes have been increasing since the beginning of history, but never so rapidly as in the past century. This has resulted in an enormous mass and variety of indirect agents, the existence of which is an essential aspect of civilized life. Many materials are found in forms and in places where they cannot serve man's purposes. Energy is found dissipating itself in ways useless to him. As man grows in power of control over nature, he strives to apply these forces and materials in such ways and at such places as will best serve his purposes and gratify his desires. If he can arm himself with the energies of mine and torrent, he can react with giant strength upon the material world. He refuses to accept passively its conditions and to live on its grudging gifts. He becomes its fashioner—in a sense its creator. His intelligence and his desires are more and more potent in determining the substance, form, place, and order of the physical things about him. He transforms the world in which he lives. Accompanying and guiding the complex processes of industry are numberless acts of choice and valuation. Man's desires for direct goods and his resulting valuations motivate and direct his productive activity. The technical processes of production, in turn, have their reflex influences upon values. To arrive as fully as possible at an understanding of these interrelations is the task of the theory of value.

§ 7. **Natural diversity both of direct and of indirect goods.** One of the basic facts in the situation we are trying to analyze is the natural diversity of things. All the efforts of men in the most developed economy can not annul or obliterate the differences in the quality of goods. Desirable goods are limited in quantity and vary in quality. Hence they have

value, and some are more valuable than others. If they were all alike, they would all have the same relation to human desires, and would all have the same value. Likewise durable material agents and sources of power are limited in quantity and vary in convenience of location and in their efficiency. As men seek to gratify their desires, they attach importance to these agencies for the achievement of their ends. Each is valued for its uses. Anything which is seen to have a relation, direct or indirect, immediate or remote, to the gratification of man's desires, is brought within the circle of economic goods.

§ 8. **The improvement of technical processes and methods.** The invention, improvement, organization, and use of the various agencies which we have been considering, makes up the whole of man's economic activity. This is, of course, a very broad field, difficult of comprehension as a whole. It comprises a vast range of technical achievement. In the list of those who, from the beginnings of human culture, have made contributions to the slow task of improvement, we should find Adam the gardener, Abel the keeper of sheep, Tubal-Cain, "artificer in brass and iron," Jubal the "father of all such as handle the harp and organ," Archimides, Gutenberg, Watt, Fulton, Elias Howe, Samuel Morse, Bessemer, Edison, and countless others, known and unknown—peasants, artisans, natural scientists, and practical inventors.

The technical improvements made by such men have been among the most important of the instrumentalities of economic progress. They involve in practically all cases some better combination or joint use of complementary agents. The technical problem is usually a matter of the most efficient proportioning, combining, or utilizing of different indirect agents.

In a mechanism, if one part is increased without increasing the other parts, a point is reached where it does not add to the result. If in the building of a bridge the weight of the floor is increased beyond a certain point, the rest of the

bridge being left unchanged, the bridge is weakened instead of strengthened. If the weight of the iron in the framework is increased beyond a certain point without strengthening the piers, the structure as a whole is weakened. If the piers are greatly enlarged, the added materials and effort may not weaken the bridge absolutely, but they dam up the stream, and thus increase the force of the waters pushing against the structure. At the same time, in flooding the adjacent lands they cause another result which was not intended or desired.

A bicycle frame, like a chain, is no stronger than its weakest part; if the strength of all parts of the wheel and frame is in proper proportion to the strain they must bear, added weight to any single part weakens the whole machine. The development of the modern type of bicycle, by many experiments, is a good example of the adjustment of materials according to the principle of technical efficiency.

A variation of the same principle is seen in chemical combinations. Exact proportions of materials must be used to get a certain result. Increasing one ingredient will not increase the desired product. Either the added part, not entering at all into the compound, remains as a useless or an injurious impurity, or it unites to form a product different from the one desired.

Thus it is in all the practical arts. The farmer must have rain to water the crops, but too much may ruin them. The cook must have fuel for heat—enough to bake but not enough to burn. The smith watches the glowing metal and puts it upon the anvil when it is just at the welding point. The laundryman puts a tinge of blue in the white clothes; with less or more the clothes are either too yellow or too blue. The painter must use the proper proportion of oil and white lead or the paint will not be durable. The plasterer must mix neither too much nor too little sand with the lime if he will make a lasting coating on the wall. The potter seeks to have the heat of the kiln exactly right to give the perfect glaze to the stone- and china-ware. There is this technical problem

of the right proportion quite independent of the value of the goods. The idea of economic utilization arises when man recognizes these technical facts and their relations to value in his use of a limited supply of agents.

§ 9. **The economic test of technical improvements.** It is a notorious fact, however, that not every improvement of technical method is advantageous from the economic point of view. The Patent Office at Washington is a veritable graveyard of ingenious inventions that are not commercially profitable. The inventor, in order to gain material rewards and at the same time to benefit mankind, must study not only the technical side of his problem, but the question of value as well. Many technical improvements of method cost more than they are worth. The market may be too small to warrant the increased investment, or many other difficulties may stand in the way.[1] The ultimate test determining whether a new process or a new device is better to use than the old one is not technical, but economic. It must effect a net increase in value. If it occasions extra costs, the additional advantages must more than offset them.

§ 10. **The psychology of indirect valuation.** We have now pointed out the logical relationship between the desires of man and the valuations which he puts upon indirect agents. Nothing seems more simple or obvious than that the agent is valued *as* an agent—as an instrumentality in the gratification of desire. However, it is well to recall that the process of valuation is not always as logical and as consciously calculated as it would seem. The reactions of men are in large part impulsive, instinctive, imitative, and habitual, rather than rigorously logical. But experience and reflection alter the choices and extend their range. The desire which at one time was aroused only by the direct good, becomes more or less spread over all the indirect goods connected with it. Thus men, without deliberately and consciously reasoning on the matter, desire directly many of the things which technically

[1] See, for example, ch. 38, on Abstinence and production.

are of only indirect use. In many cases instincts have probably evolved to affect desire for indirect goods whose real relation to desires is never fully perceived or understood by the person choosing. The desires of civilized men have become diffused over, and now pervade, the immense complex equipment of the economic world, and both the direct and the remotely indirect goods color the feelings and influence the conduct of men. They are alike the objects of desire. Hesitation and conscious calculation do, however, occur in some choices, and have occurred in many other choices which have now become habitual. And in all highly organized business, where production is for the market, the business man calculates not only consciously, but laboriously and with great care, both the desires of consumers and the relation of indirect agents to those desires.

§ 11. **The element of time in the valuation of indirect agents.** There is one more important aspect to the problem of the valuation of indirect goods. If the value of the indirect use is but the reflection of the direct use, it might, on first thought, seem that it should always be of the same magnitude. If an agent, A, used indirectly, produces a limited number of direct uses, x, y, z, it would seem that the sum of their values should be the same as the value of the agent, A, itself. If the indirectness of the process were the only factor in the case this would be true. As a matter of fact it normally requires a certain period of time for the direct use to be obtained. The uses of an agent are frequently spread over many years. Because of this lapse of time the value of the agent A at the present moment is not by any means the same as the aggregate value of its uses in the future when they will occur. The element of time introduces a different problem which will call for consideration at a later point in our study of the problem of value.[1]

[1] Particularly in Part IV on Time-value and interest.

CHAPTER 11

CONSUMPTION AND DURATION

§ 1. Consumptive and non-consumptive uses of goods. § 2. Direct uses, consumptive and durative. § 3. Indirect uses, consumptive and durative. § 4. The single consumptive use. § 5. No economic goods absolutely durable. § 6. Inevitable depreciation. § 7. Using up of agricultural land. § 8. Artificial durability of agricultural land. § 9. Varying rates of depreciation of machinery. § 10. Repair of tools and machinery. § 11. Economy of repairs. § 12. Production as betterment and repair of nature.

§ 1. **Consumptive and non-consumptive uses of goods.** We have in the last two chapters considered two essential aspects that every use of a good exhibits. We have seen that every use is more or less direct or indirect (roundabout), according as the good acts directly upon the person using it or indirectly transmits its effect through some other good; this is the technical relation of uses (and of goods) to desires. We have seen next, that a use may be either present or future in varying degrees (and in either case may be valued); this is the time-relation of uses to desires. We now come to the consideration of yet another aspect of use, namely, the effect that the use has upon the duration of the object yielding the use (called the use-bearer). This may be termed the duration-relation of goods to desires. The apple is eaten and gone; the picture continues for years to impart beauty to the room. The lemonade quenches thirst once, the glass in which it is served may be used many times. The use that destroys the good (or its possibilities of further use) is a *consumptive use.* Coal is consumed and becomes ashes, smoke, and gas, as it is burnt to create heat for comfort, for cooking, and for steam-power. The white gloves are consumed when they become

soiled (unless they can be cleaned). There is, of course, no physical annihilation of matter in any of these cases, but merely a change in the qualities that relate the good to desires. The essential test of economic consumption lies in the effect that use has in unfitting the use-bearer for the rendering of subsequent uses.

In contrast with the thought of consumption of a use-bearer is the thought of its duration. In contrast with the consumptive use, which *uses up* the use-bearer, is the *durative use* which leaves the use-bearer more or less capable of rendering subsequent uses. These ideas are abundantly illustrated in what follows.

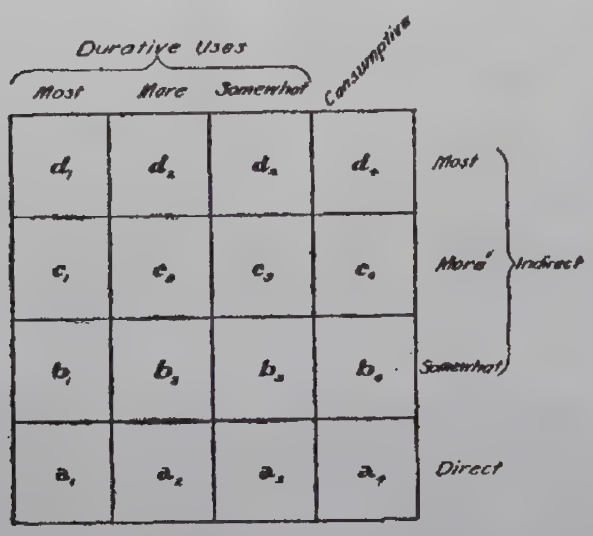


FIG. 19. DEGREES OF DIRECTNESS AND OF DURATIVENESS.*

§ 2. **Direct uses, consumptive and durative.** Direct goods that are momentary gratifiers, yielding only a single use, and being destroyed in the using, are represented by multitudes of consumable foods and drinks in cellars and in pantries, on tables, in restaurants, hotels, and saloons; by matches, candles, oil, gas for lighting, fuel for heating houses; by cigars, fireworks, and many other things which appeal directly to the senses. The use of these things when it occurs unites the three qualities; it is direct, it is present, it is consumptive.

A dwelling is an example of a good for direct use which is durable and gives off throughout a period of time a series of

* If degrees of directness are represented as ranging from a to d (as in Figure 18) then degrees of durativeness may be represented as ranging from 1 to 4 (4 being the consumptive use). These qualities thus are in two dimensions; for example, the use of a marble statue might be called a_1, that of a tent a_3, that of a match for lighting a blast furnace d_4, etc.

direct uses. The durability of houses is not absolute or uniform, but is more or less, varying from the Indian tepee to the marble or granite palace that will stand for centuries. Houses are subject to wear and tear, and thus undergo a slow consumption, but this, with care, is so slight that it often is less than the deterioration from disuse. The supply of housing, while insufficient for some classes of our population, is to-day enormous—winter houses and summer houses, city and suburban, private houses and hotels, churches and theaters. All are more or less durable, and are direct goods, excepting as the owners use them in business as a source of rent or of profit. Every durable agent, of course, contains future as well as present uses. That is the essence of the idea of durativeness. Direct, present, and durable (in a degree) are also furniture, pianos, organs, and musical instruments of every kind, carriages and horses, bicycles, automobiles, boats, and many other material agents used for enjoyment. Especially good examples of this class of goods are those whose appeal is to the eye—pictures, statuary, and other contents of private and of public museums. Very similar in this regard are all grounds with improvements used for residence purposes, all yards, trees, lawns, playgrounds, public parks and reserves for sightseers such as the Yosemite Valley, Yellowstone Park, and Niagara Falls, and mountains covered with forests held for private or public pleasure in hunting, fishing, and camping. Nearly all the material equipment used in education is marked by this grouping of qualities, as well the school grounds as the school books, libraries, furniture, and apparatus for illustration and instruction. Among the most lasting of the goods which man has shaped by his action are great engineering works—railroad tunnels, bridges, aqueducts, roadways, canals between rivers, lakes, and oceans (Panama, Suez, etc.). These, so far as they are used by passengers, are giving direct uses. Ornaments and other goods made of the precious metals are among the most durable of the direct goods man possesses. Other kinds of ornament, such as feathers, laces, and ordinary

clothing, while less durable than most of the foregoing examples, share the quality of durability in a degree and with care may be made to yield very lengthened series of uses.

§ 3. **Indirect uses, consumptive and durative.** We turn now to illustrations of indirect uses which are consumptive or durative in varying degrees (and, of course, either present or future). Many of the objects that yield indirect uses yield at the same time direct ones; indeed, this is the rule rather than the exception. Other examples of consumptive goods used indirectly are: the oil giving light in the factory, the ice in the refrigerator. These are present uses and are also capable of direct use. The oil in a tank, and the ice in the icehouse contain future consumptive uses. A dynamo producing electricity is yielding a present durative use and, as it is capable of continuing to yield similar uses, it contains also future durative uses. Further examples are most tools, implements, and machines, and all houses, lands, engineering works, and all transportation agencies that are used both directly for passenger service, and indirectly in carrying freight.

§ 4. **The single consumptive use.** The distinction between consumptive and durative uses should be kept clearly apart from that between direct and indirect uses. As a matter of fact, directness of use is essentially a technical rather than an economic quality. It is equally important to keep the matter of the "timeliness" of a use distinct from either "directness" or "consumptiveness." In connection with timeliness arises the very subtle problem of capital-value, which will be discussed at some length in Part IV of this book. Wrapped up with the question of durability is a problem to which we must give earlier consideration—the problem of usance-value. This will be taken up in Chapter 13. Our immediate task, however, is a somewhat further consideration of the nature of the distinction between consumptive and durative uses.

We have been employing the words consumptive and durative as contrasted terms. Strictly speaking, however, consumptive and durative uses shade into each other by almost

imperceptible gradations. Even most of the more fleeting uses continue through an appreciable period of time. The great majority of goods in which man is interested are more or less durable in character. The things which may reasonably be said to have consumptive uses—that is, things which are consumed at a single use—are relatively few, tho absolutely numerous and important. Food, for example, is consumed at a single use; illuminants and fuel can be used but once; cut flowers quickly wither and fade. The materials of which these things were composed are dissipated in sewage, garbage, rubbish, dust, ashes, carbonic acid gas, etc., and can be reassembled —if at all—only with difficulty.

§ 5. **No economic goods absolutely durable.** At the other end of the scale are things which render their services for an extremely long period of time. All earthly things, however, wear out, change, or decay. Whenever man's hand is withheld, nature takes possession of his work, regardless of his purposes. Dust gathers on unused clothes, and moths burrow in them. Shut up a house, and windows are shattered, roofs leak, and vermin swarm. To close a factory is to hasten the time when buildings and machinery will be piled upon the rubbish heap. The most magnificent and solid works of man have crumbled under the finger of time. The earth is strewn with ruins of gigantic engineering works, aqueducts, canals, temples, and monuments, whose restoration would be no less a task than was their first building. Everywhere vigilance and repairs are the conditions of continued uses of wealth. There are, thus, no economic goods which as usable wholes are absolutely durable. When we divide uses into those which are consumptive and those which are durative, we mean simply that the duration of the goods yielding the former is relatively brief, whereas the latter endure through a relatively long period of time. The line of demarcation between the two is not absolute or sharp.

§ 6. **Inevitable depreciation.** Changes go on in the substance of things which cannot be prevented by any attention

to repairs. The wood in a framework will decay, the metals crystallize. There is also an unpreventable wear of parts that can not be replaced without replacing the whole machine. It is the aim of the modern manufacturers to make machines like the wonderful one-horse shay, every part of equal durability. The development in America of the system of "interchangeable parts" has greatly simplified and cheapened repairs, and has lengthened the working life of machines; nevertheless they go at last to the scrapheap. This general depreciation appears to be nearly avoided in large factories where there is serial replacement of the parts, but occasionally some invention or some improvement of process necessitates an almost completely new equipment. An old man said to me when I was a boy: "I built this house and have lived in it forty years; it was well built, has been repainted regularly, has never been allowed to leak a drop, and it is as good as it ever was. I see no reason why it could not be kept to eternity if always kept in repair." But the same could not be said of the house now. There is a termination of the use-bearing power of nearly all kinds of goods, by this natural decay or by technical progress, and they have to be replaced by new stuff and by new forms.

§ 7. **Using up of agricultural land.** Even land, which men are prone to think of as everlasting, is in some of its most important uses subject to constant wear and loss of its valuable qualities. In agriculture the land furnishes not only standing room and a surface exposed to air, sun, and rain, but a store of materials fitted to nourish vegetation. Under the proper conditions of heat, moisture, and texture of soil, the plants, through the aid of bacteria, select and take up partly from the air but mostly from the soil, the chemical elements needed for their growth. Cultivation of the soil is regrouping and collecting the fertile elements, but harvesting the crop is extracting them from the soil. This process can not be continued indefinitely unless these elements are restored to the land. The barbarian lacked the forethought and patience to preserve the

land, and his methods of agriculture *used up* the soil. After a few years he moved on, burned and cleared out another little space in the midst of the forest. The progress of men toward a settled life and a permanent agriculture has been accompanied step by step by the introduction of conservative (durative) methods of using the arable land. The temptation to revert to improvident methods has again and again shown itself as a result of the demoralization of war, of invasion by less advanced peoples, or of the opening of great areas of new lands.[1]

§ 8. **Artificial durability of agricultural land.** When a method of permanent agriculture has become firmly established in a community, guarded by ancient customs and by very careful contracts between tenants and landlords, agricultural estates, as wholes, are given artificially an appearance of great durativeness, altho the land, excepting as bare surface, is being repaired and remade continuously. The uses of the farm are estimated as a net sum, after deducting the cost of all the repairs. Agricultural land has constituted in western Europe in recent centuries the most permanent body of wealth, and thus it came to be looked upon mistakenly as a most perfect type of durative goods. Land-sites for residence and business uses, merely as standing room, are in most locations among the most durative of all forms of wealth; on the contrary, mineral deposits constitute a strikingly consumptive form of use-bearer.

§ 9. **Varying rates of depreciation of machinery.** There is a great difference in the length of the economic life of manufacturing appliances. The building is fairly durable; yet in good business practice an average depreciation-rate of 1½ per cent a year is allowed to offset a reduction in its value of over 50 per cent in thirty years, after providing insurance against the chance of loss by fire. Machinery differs greatly in durability; well-made, substantial machinery depreciates about 5 per cent yearly. The engines and boilers depreciate

1 See ch. 35 for further remarks on the destruction and conservation of farm lands.

more rapidly than the running gear; the loose tools have to be replaced every second to fourth year; while the materials consumed in the industry must be repaired and replaced at every repetition of the process of manufacture. If a factory is to be maintained in its efficiency in a way to afford its owner a continuing income, everything about it must be from time to time repaired and replaced.

§ 10. **Repair of tools and machinery.** Separate tools are dependent for their usefulness on substance and form, and they gradually undergo changes which consume them—by decay, rust, wear, breakage, etc. They thus as a class are looked upon as consumptive agents. Yet the whole groups, the parts of which can be separately repaired, may be given artificially a large measure of durativeness.

The railway unites in a large degree the use of land surface with that of durable forms of metals. The roadbed, which is but the natural surface excavated or filled to a more suitable grade, is the most permanent part; yet every frost weakens, every rain undermines, a portion of it. Earthquake, landslide, and flood fill up the ditches, or tear down the embankments. Constant work is needed to keep it fit and safe for use. On the roadbed is the track, slightly less permanent, more frequently changed. The ties rot, and even the steel rails must be replaced in twenty or thirty years. The rolling-stock is still less durable, and the different parts vary in length of life. It is said that the wheel-tires of a locomotive are renewed four times, the boiler three times, and the paint seven times, before the machine as a whole is rejected as entirely worn out. The oil used on the bearings, which is a necessary part of the running machine, has to be applied every day.

§ 11. **Economy of repairs.** In general the maintenance of repairs in durative agents is a large part of the practical art of the business manager, whether husbandmen or artizan. It is an art calling for as much judgment and skill as does any part of the management. The neglect of repairs may have different results in the different parts of the enterprise. Fail-

ure to replace separate, worn-out tools, while not preventing the future restoration of the plant to its full efficiency, causes the factory as a whole to be less efficient. Each part of the entire outfit being needed in due proportion,[2] the want of any one tool causes a loss of the efficiency of the factory as a whole disproportionate to the missing tools. Failure to apply seed to the land causes the land as a whole to be useless for that year's crop. The seed is a necessary part of the productive field, considered as a unit, and its annual application is closely analogous to repairs. In other cases, neglect of repairs increases the expense of repairs and cuts off future incomes. The adages, "A stitch in time saves nine," and "An ounce of prevention is worth a pound of cure," must be acted upon in every industry. The neglect to repair a roof causes damage to an amount many times the cost of a new roof. Failure to replace a bolt costing five cents may result in the rack and ruin of a machine worth many dollars. A handful of earth on a dike may save a whole country from destruction. In every business that is to be continued it is true that neglect or postponement of repairs causes a falling off of the value of the uses, usually far outweighing the temporary saving in cost.[3]

Neglect of repairs may be economical, however, when industrial changes have first reduced the demand for the agent and consequently the value of its uses. When the line of travel changes, it does not pay to keep an old hotel up to the same state of repair as when it had a great patronage. Old factories sometimes may better be allowed to depreciate, while the price of repairs is invested in more prosperous industries. In a declining neighborhood the houses fall into decay, the owners seeing that "it would not pay" to keep them up.

§ 12. **Production as betterment and repair of nature.** Let us take a general view of the topics of this chapter. The one

2 See below on proportionality, ch. 12.

3 See below on cost, ch. 28, and on time-value, ch. 20, and ch. 21, sec. 2.

general method of industry from the advent of man upon the earth to the present moment has been that of appropriating natural objects as they are found in the world. Man takes these objects, improves them where he can, destroys (consumes) some in the using, and repairs others as they wear out. That is all that "production of material goods" as an economic act ever can be—appropriating, bettering, conserving, and repairing natural objects. *Production* is drawing out, *leading* forth something that is already there. The supplies of goods were at first conditioned and limited by the soil and climate, by flora and fauna. Man's part in "production" consisted at first in picking the fruits and in killing the animals which nature had produced. Gradually, however, man has intervened more and more at earlier stages of the natural processes, has guided and aided them.

The attempt has been made to divide economic goods into two classes, ascribing to the one class permanency and calling them the natural agents (the unproduced goods); and to the other the possibility of indefinite increaseableness, the artificial agents (the produced goods). This is a futile distinction to apply to goods in modern industrial countries, and it obscures the true nature of production. We take the original stuff of which everything is composed, whether arable field or house or watch-spring, as we find it in nature. Nearly everything not now underground (even land surface for business buildings, for residence, and for agriculture) is more or less artificial, that is, has in some degree been altered by man's action in leveling, digging, shaping, fertilizing, etc. The minerals beneath the surface of the earth remain most truly "natural" until they are appropriated, when many of them as elaborated articles become the most artificial of all material goods.

Instead, therefore, of trying to classify concrete goods as artificial and natural, it is better to make a continuity classification and to distinguish the consumptive and durative qualities of goods which are found in varying degrees in all

agents. We shall later see how, in a variety of ways, men take account of these differing qualities and adjust their acts and their valuations accordingly.

CHAPTER 12

THE PRINCIPLE OF PROPORTIONALITY

§ 1. The principle of proportionality; its general nature. § 2. Cost and sacrifice defined. § 3. Sacrifice of effort a matter of proportion. § 4. Sacrifice involved in common use by several users. § 5. Gross and net uses. § 6. The doctrine of separable uses. § 7. More intensive utilization. § 8. More extensive utilization. § 9. Application of complementary agents at the two margins. § 10. The principle of proportionality in agriculture. § 11. Intensive use of ground space. § 12. Intensive use of tools and machinery. § 13. Intensive development of water power. § 14. Bearings of the principle.

§ 1. **The principle of proportionality; its general nature.** In what has been said in regard to scarcity as an element in value (Chapter 2) it was implied that value involves, in the simplest case of direct or immediately enjoyable goods, a certain proportionality between goods and the desires of men. The more abundant are goods, *relative to the desire for them,* the less is their value. Similarly, in connection with the principle of evaluation (Chapter 4), we encountered, in the relations between the stimuli and the reactions of the nervous system, a certain quantitative relation, or principle of proportionality. In the whole process of trade, also (Chapter 5, Trade by Barter), which is the adjusting of a ratio between two or more goods in a group of traders seeking to buy and sell, an element of proportionality is plainly involved. And still later (in the last three chapters, 9–11) in discussing the improvement of productive processes we have touched upon the important problem of proportionality in the use and development of indirect agents. We saw that the development of new inventions, new processes, etc., was largely a matter

of bringing things together in the most effective way—that is, in the best proportions for the accomplishment of certain physical, mechanical, chemical, or other desired technical results.

§ 2. **Cost and sacrifice defined.** In our evaluations there are usually certain negative items variously referred to as cost or as sacrifice. In its broadest sense cost may be defined as that which must be given up to get another thing. This is its original, and still general, meaning. This would include, on the one hand, sacrifices of a purely psychic nature —disappointments, regrets, etc., caused by doing or by giving up a thing; and, on the other hand, the prices of things—whether expressed in money or in other goods. Usually, however, in business the word cost is given a more specialized meaning, and we shall take this in order to distinguish it from price in general on the one hand, and from sacrifice on the other. In this narrower connotation *cost* means the outlay (considered as a business expense and expressed in money terms) which a person must make in order to obtain a certain product from goods. *Sacrifice* may be defined as that less definitely measured, psychic, alternative good (whether of enjoyment or of freedom from effort) which must be given up to get another good. Finally, price is the good surrendered in a trade with another person.

Sacrifice is involved in every choice and in every price in barter or sale; but cost, in this business man's sense, only when the outlay for a good up to date is compared with its value or with its selling price.

§ 3. **Sacrifice of effort a matter of proportion.** In the case of complementary agents (see Chapter 4, section 5) the valuation of each in any particular use is constantly affected by the valuation of the other. This always involves a problem of proportionality. The simplest case is presented by the use of one's time and labor in getting enjoyment from a direct good. The sacrifice of time and labor are outlays which have to be balanced against the gross or total advantage af-

forded by the good. It is a sort of offset or deduction, and the real or net service or psychic income is the resultant of the action of the two complementary goods, the man's effort and the material object. A piano is capable of being played upon steadily for twenty-four hours a day, but the player becomes weary after two or three hours, and values the uses of the piano for the rest of the day at zero. These uses must go for nothing if the piano is not played, but they are to be realized at too great a sacrifice. A case of this kind is presented whenever any durable agent in the owner's hands is capable of affording additional uses which as a matter of fact are not availed of. Such uses lie beyond the boundary of *economic* utilization, for the owner has not the time to use them—or the energy, or the present desire.

Riches and poverty affect the estimate of sacrifice involved in the use of goods. The more highly the person is able to value his own time, because of his riches, income, etc., the more highly he values the earlier uses of duplicates to save his time, and the less highly he values the later uses of goods which tax his time. Each article in the scanty belongings of the poor is used a great deal; each article in the abundant belongings of the rich is used very little, and the goods of the middle class occupy positions ranging between these extremes.

§ 4. **Sacrifice involved in common use by several users.** It often may happen that the further uses contained in goods may be taken by another person, possibly by several, each of whom may bring to the use his freshest powers. This may enhance the usefulness of the good, but again sacrifice may result from the *inconvenience* of common use, and sooner or later the outlay-value exceeds the gross income-value of the uses thus secured. A book stands many hours untouched on the shelves of the library; it has potential uses for some one during every minute of the twenty-four hours but they can be secured only with inconvenience. When, as often happens, two or more persons wish to use the book at the same

hour, time and energy are wasted. The greatest net uses, therefore, are seen to be to the first user and in the first hour, for these uses cost the least time and trouble. If the members of a family will take turns, one chair will serve for all of them; but if all are to be able to sit down together, a chair must be provided for each. Often it will happen that only one chair is in use, the other nine chairs being valued only for their potential uses. I knew two young men who owned a dress-coat in partnership, and as they had different evenings free from business all went well until both were invited to a reception which both were very eager to attend. In tenement houses there are sometimes let to lodgers beds or bunks that are never allowed to get cold, men working in the day occupying them by night, and men working by night sleeping in them by day.

§ 5. **Gross and net uses.** In cases of this kind each use of the chair, or the book, etc., is technically the same as every other use, but economically these uses must be looked upon as a series of unlike valuation-magnitudes. The value of each use is a net amount resulting from subtracting the outlay from the income-value. Even if the income-values remained undiminished by bringing in new uses, the outlay-values would be increasing, and the net use-value correspondingly lessening. A point is reached where the net value of the use falls to zero. Thus in Figure 20 if on the line BB^7 be represented the height of successive gross uses and on the line CB^7 the height of the successive outlays, net uses are B^1C^1, B^2C^2, etc., until at B^7 there is no further net use.

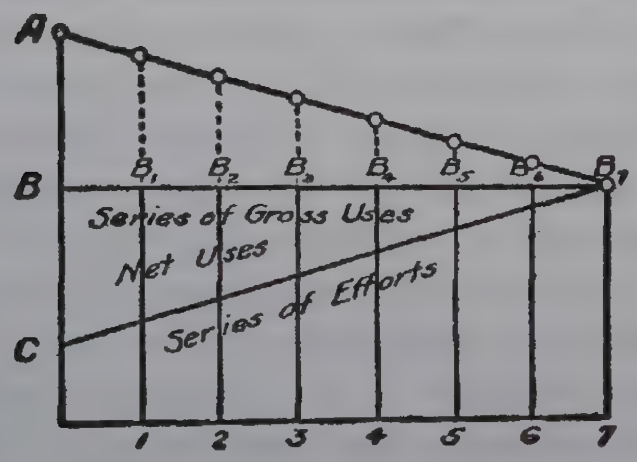


FIG. 20. GROSS AND NET USES.

§ 6. **The doctrine of separable uses.** We may think of the use of an object not as one undivided whole, but as a

group of uses, separable each from the other. Likewise any one of these uses is separable from the use-bearer considered as a concrete object. Every economic good, the use of which can be spread throughout a period of time, may be looked upon as consisting of groups of uses. The simplest case of this results from mere physical divisibility. A basketful of peaches is eaten piece by piece; each peach may be counted as one use. In this case the use is consumptive: it is not separable from the using up of the use-bearer itself.

The truly separable use, however, is found in the case of a durable agent which continues through a period of time to render a series of durative uses. A very perfect example is a diamond necklace, the sparkle and charm of which is a use which is absolutely without detriment to the use-bearer (i.e., the necklace, tho perhaps not to the wearer). Many agents have this enduring quality more or less fully (see Chapter 11 on Consumption and Duration), and in all such cases the durative use may be treated practically and theoretically in economics as something *separable* from the use-bearer, in matters of valuation, of trade, and of price. The peaches may be gathered without harming the fitness of the trees to produce another crop. Shelter is furnished, once the house is built, without destroying the house more than disuse would, if it stood tenantless. The horse is the better if driven moderately each day, and the carriage lasts for years. In every such case, the use is something different from the "using up" of a limited number of goods, for there is left in the use-bearer the power to go on yielding indefinitely some more of the same product or use if it is kept in repair.

Some of the uses contained in a use-bearer may be actual or realized; others may be and may remain merely potential. Or they may all be realized in the course of a period of time, at the end of which the good is entirely consumed or worn out. The uses of a suit of clothes, for example, may be realized only day by day for a considerable period. Some men go on wearing a suit until it is almost completely worn

out before discarding it; others discard clothing while there are still many possibilities of use in it. It may perhaps be safely asserted that the great majority of things have potentialities of which the owner for one reason or another does not avail himself. As already indicated, it does not pay to squeeze all possible uses out of a good. Uses 8, 9, etc. (beyond 7 in Figure 20), are quite possible of realization, but the attendant inconvenience or sacrifice is so great that they are valueless, and they will be ignored. The owner will not forego his sleep because he dislikes to have the piano go unused through the hours of the night.

In the case of a durable good circumstances may warrant a very slight utilization at one time and a very much more complete utilization at another. The factory which has been running on half-time may later be operated day and night to meet a great increase in demand.

§ 7. **More intensive utilization.** The uses of a good at a given time are actual or realized up to a point, limit, or margin beyond which further uses would not be worth the outlay of effort or of other goods. This point in the utilization is called the intensive margin. Using the thing more and more, while uniting other things with it, is using it more intensively. Getting more use out of the book by effort, out of the farm by applying more fertilizer, out of the factory by employing two or three shifts and working longer hours, out of the house by putting more people in it, is intensive utilization. The superior uses come easily, naturally; the inferior ones are to be secured only with increasing difficulty. When some change comes—such as an increase in demand for the product of an agent—which causes that agent to be more intensively

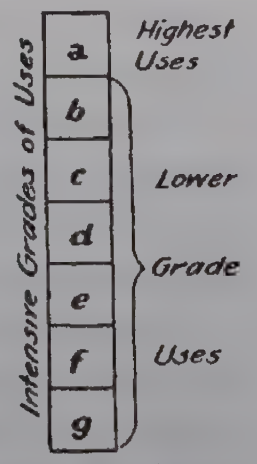


FIG. 21. INTENSIVE GRADES OF USES.*

* The use a is the highest in the sense that it is the most easily obtained. Like results are to be had by the use of b to g successively only at greater costs; or less valuable results at the same costs.

utilized, this change is said to have *lowered the (intensive) margin of utilization.* The inferior grades of uses are being resorted to.

§ 8. **More extensive utilization.** This same change of demand may, however, bring about a simultaneous change of a different sort. If there are various agents of different degrees of excellence, and only the better grades are being used to meet this particular demand, then an increase in the demand is likly to result not only in a more intensive utilization of the superior agents, but also in the calling of some of the inferior agents into use. The best agents that are available at the time are used first, but as they are more intensively used, there is increasing inconvenience. This may be relieved by using either physical duplicates of the better agents or by using inferior agents. If there is more than one of a certain kind of agents, the duplicates are distributed so as to be where most valued by the owner. A man having two umbrellas keeps one at his office and the other at home; a student having two books of the same kind keeps one at his room and the other at the university; a farmer having two hoes keeps one at the barn and the other in a distant field, and by this method the additional units have higher uses than if they were used in the same way or at the same place as the earlier units.

It may finally be necessary to have recourse to agents which as a whole are inferior to the other agents, but whose first uses are better than the remaining intensive uses of the better grades of agents. This employment of inferior agents is also called *lowering the margin of utilization.* But it is a different margin with which we have to do—the margin between superior and inferior agents. It is the *extensive margin.* At the same time that an increase in demand causes the use of double shifts in the efficient factory, another factory, of inferior efficiency, which has been completely idle, may be brought into use, tho possibly not to its full capacity. There has then occurred a change or lowering of both

margins. At the same time that the cultivation becomes more intensive on the better fields, it becomes more extensive if there are other areas which have just come to have valuable uses. The intensive margin of use is in the particular thing; the extensive margin is the line between the superior and the inferior good. The inferior agent which is not utilized is spoken of as "below" or "beyond" or "outside of" the (extensive) margin of utilization. The interrelations between the two margins are shown in the diagram.

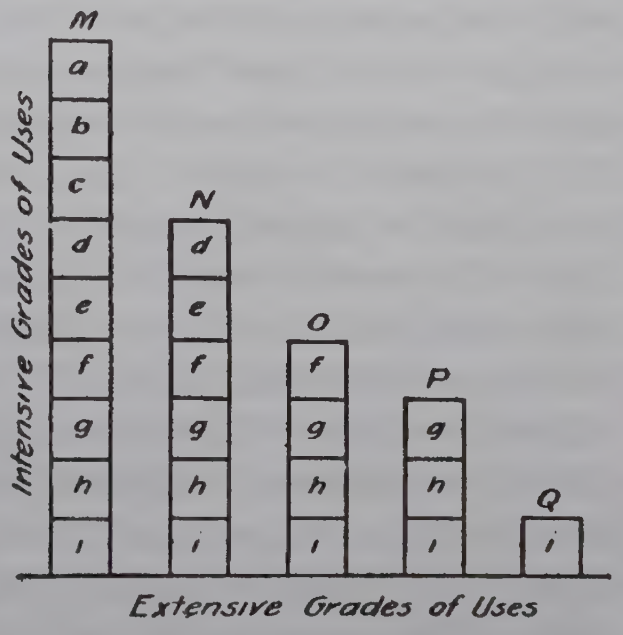


FIG. 22. INTENSIVE AND EXTENSIVE GRADES OF USES.*

Intensiveness and extensiveness of utilization are relative terms. The utilization of one machine or of one piece of land is more or less intensive as compared with another when more of other agents (e.g., labor) is used with or upon it; or the utilization of an agent becomes more or less intensive than it was before if more or less complementary agents are used than before. One might say that the use of an agent is intensive in one place as compared with another (e.g., land in New Jersey compared with that in Kansas), yet extensive as compared with still another place (with that in western Europe). In the same way extensive utilization is relative.

* The rectangles, M, N, O, P, Q, represent agents of various grades, each consisting of strata of uses. The best uses are a, b, and c, in M; but after M has been utilized intensively down to d, N will begin to be utilized at its highest point. When utilization goes down to f, O comes into use, and so on. Therefore it will be seen that until the intensive margin takes in d, M is on the extreme margin of utilization, and N is just outside it; when the intensive margin falls to g and h, P is inside the extensive margin, and Q is just outside.

§ 9. **Application of complementary agents at the two margins.** It is not our purpose at this point[1] to emphasize the fact (important as it is) that changes of demand occur, and that these changes cause the best economic proportion to change. Rather we use illustrations of change to make clear that in any given set of conditions there is a best proportion in which to combine agents. There is a right degree of economic utilization in that particular situation. Where this best proportion is attained, is a point of economic equilibrium, in the sense that there is in the situation itself (and until some other conditions change, as invention, increased demand, etc.) no motive to change the proportion. In such a case the effort is made to repeat the process, to maintain just that proportion which has been found to be on the whole best. If either of two complementary agents is used in greater or less amount than this best proportion, a loss results, something less than the possible maximum of value is obtained.

Now the case of the two margins always occurs when one of the complementary agents is present in more than one quality or grade, as respects stuff, form, or place. Then the supply of the complementary agent is distributed over the different grades of uses, now to the lower uses in the better agent, now to the upper uses of the poorer grades. In this way the effectiveness of each unit of the complementary agent is kept equal on the intensive and on the extensive margins of utilization of goods. As the value of the *added* product in the more intensive use of a particular agent decreases, a point finally is reached where it is better to transfer the outlay to another agent, to shift from the intensive to the extensive margin, by going over to the use of another field or of another machine not so good. As the effectiveness of the labor, of the machinery, of the lands, of complementary agents of every kind, that men have to apply to two grades of another agent is being compared constantly, the uses of the complementary agents are

[1] We are studying here the static problem. In Part VI, chs. 32–39 the dynamic problem is much more fully treated.

distributed along the two margins. The margin of utilization is marked by a line of uses valued at zero. When used to that point the total value obtainable from the agent is at its maximum. If utilization is less intensive the value of the last possible use is lost, and if it is more intensive there is a net loss on the outlay.

§ 10. **The principle of proportionality in agriculture.** The principle of proportionality applies to the use of agents in all kinds of business and determines the degree of their economic utilization. This general principle was first formulated in reference to land in agriculture, and for a long time was supposed to be peculiar to the use of that class of agents.[2]

The use of land in agriculture is conditioned on the presence of a top-soil of suitable mineral elements and texture, and on a proper surface, exposed to light, air, and sun, with the necessary climatic influences of temperature, moisture, etc. It was long ago seen that on such a piece of land a crop *larger than usual* could be obtained only with greater effort or expenditure.[3]

It is obvious to every farmer and gardener that he cannot indefinitely increase his crop, that two men cannot always produce twice as much as one man on a fixed area of land, and that in general the product does not vary either up or down in proportion to the labor and materials applied. Instead of 20 bushels to the acre, 25 or 30 bushels might be raised, but it would require more plowing, labor, seed, fertilizer, and other expenses, in value greater than the addition

2 Of this supposed peculiarity various explanations were given, such as the chemical qualities of the soil, and as the assumed durativeness of agricultural land, etc.

3 Note the significance of the phrase "larger than usual." Surely the crops may be larger some years than others, and especially large in those years when there is remarkably favorable union of rainfall, temperature, freedom from pests, etc. "Larger than usual" means larger than on the same, or on like, land under circumstances alike except in respect to intensiveness of cultivation.

to the value of the crop. On the other hand a moderate degree of thoroness of cultivation is necessary to get any results worth while; and, besides, if a small crop is raised, the value of most of the uses of the land for that season would be entirely thrown away. Only 5 or 10 bushels per acre might be raised with less expense per bushel merely for labor and material, but there would be left no remainder to apply to the value of the land-uses. Between the wastefully small crop of 1 bushel and the wastefully large crop of 100 bushels an acre, there lies a point, more or less correctly ascertained by experience, where the largest net result is obtained, a point where by aiming to raise either less or more the man in charge gets a smaller net return (surplus of total price over expenses).

§ 11. **Intensive use of ground space.** The principle of proportionality applies to ground-space in all industries. Some space is needed for any activity, even for mere existence, and a limited area cannot afford an unlimited number of uses. If a large library is accumulated in one small room, a point is reached where there is scarcely room to stand, and much energy is wasted in trying to find the books. In a university the psychical product, education, may be limited by the need of space. School-rooms, laboratories, and college class-rooms, if used all day and all night, would accommodate several times as many students as they do; but the "wee sma' hours" would not be popular; and, therefore, as students increase, buildings must be added. One cannot conveniently increase the business of a lumber-yard without a larger yard-space, or of a factory without a larger floor-space. But the added space may be gotten by spreading horizontally or piling up vertically. Even in agriculture vertical addition is possible by the use of greenhouses in which mushrooms are grown below the tables and tomatoes above, and where artificial heat gives a more intensive utilization throughout the winter. Therefore, with more space and also more time a single foot of ground can be made to yield half a dozen crops

in the year. In the production of food, however, on account of the need of sun, light, and air, the limits of space are more quickly felt, and are less elastic than in most other industries; the difference, however, is one of degree, and not of kind. In mercantile, commercial, and manufacturing businesses 10 acres or 60 acres of usable floor-space may be had by putting a building of that number of stories upon an acre of land, and installing elevators and moving stairways, parcel carriers, and telephones. Not only is the initial cost high, but the cost of maintenance likewise, and it is economically warranted only when land-space is very high priced. Business adapts itself to this law, but does not escape its operation. Neither the law of gravitation nor the principle (or law) of proportionality is violated or broken when materials are lifted to build the upper stories. Both "laws" are at work, even when the building is rising from the ground.

§ 12. **Intensive use of tools and implements.** All the implements used in agriculture are subject to the limitation of the principle of proportionality. Why will not one hoe, one rake, one plow, one scythe, one horse, one wagon, do for all the farmers of a neighborhood? It might, in many cases, but it would be with much labor and time in carrying the things back and forth and in waiting for others to get through using them; it would require work to be continued all night, on Sundays and on holidays, and even then the plowing, hoeing, harvesting, and other farm operations could not be performed when most needed. Even now there is much loss in just these ways because, tho every farmer has at least one, and some have many, of these tools, there are brief periods when there are not tools enough. Why, then, not have more tools? Because they cost. Between the extremes of no tools and a multitude a balance is struck at a point where the last additional tool adds to the price of the crop at least as much as the tool costs. The mode of estimating these costs we have later to study more closely.

In manufacture, whether by hand tools in small shops or

by machinery, in transportation, whether by boat or railroad, there is, in the mind of the manager, the same ideal point of equilibrium between the price of the uses to be added and the price of the other agents (labor, tools, materials) that must be expended to secure the additional product. To do nothing with a tool, implement, machine, for the purpose of saving the things that would have to be used with it, is to lose the use of it.

§ 13. **Intensive development of water-power.** In the development of water-power it is possible to combine the original source of water-supply with various kinds of other agents to generate more or less power. A waterfall may be made to yield, perhaps, 25 horse-power daily with a crude undershot wheel, 75 more horse-power if a dam is constructed and an overshot wheel is used, 150 more horse-power if an iron turbine replaces the wooden wheel, and 500 more horse-power if a large reservoir is built a half mile distant and the water conducted under pressure to a reaction wheel at the foot of the fall. The last is technically the most efficient, but economically its large cost will not be warranted until there is a large demand for power at that place.

§ 14. **Bearings of the principle.** It is plain that this principle of proportionality must be taken account of in all practical affairs by those who are directing the processes of productive industry, whether on a large or on a small scale. Their problem is both technical and economic. They must make effective technical use of goods, and they must combine things in ways that will pay. To the student of economics a clear understanding of this most fundamental principle of proportionality is essential to the solution of the complex problems of valuation. Things are not valued in isolation from each other. The great mass of complementary agents act and react upon each other. The valuation put upon one agent is due in part to the presence in certain proportions of other agents. Many evidences of this truth will appear to us as our study proceeds.

CHAPTER 13

THE CONCEPT OF USANCE-VALUE

§ 1. Usance and usufruct: definitions. § 2. Usance-value of agents yielding products of like grade. § 3. Usance-value of agents yielding products of different grades. § 4. Effect of the presence of one agent upon the usance-value of another. § 5. Usance-value determining utilization. § 6. Time as a factor in usance-value. § 7. Usance-value and the margin of utilization. § 8. Usance-value of complementary agents.

§ 1. **Usance and usufruct: definitions.** As the use of a consumptive good involves the using up of the good itself, the value of the consumptive use is identical with the value of the good itself. But when the uses are separable, the problem of value presents more complicated aspects. The series of separable uses of which a durative good consists may be called its *usance*. The concrete object which yields the uses may, by repairs and replacement, be treated as a durative use-bearer, capable of yielding either an unending or a definitely limited series of like uses. This theoretical possibility appears in a number of practical problems. It is involved in the careful use of any durative agent by the owner himself. It is the important consideration in the definition of the legal right of usufruct. In law, usufruct is "the right of using and enjoying the income of an estate or other thing belonging to another, without impairing the substance." One heir may have the usufruct for a term of years and another heir have meantime only the reversionary right, which, however, entitles him to sue for waste if the substance of the estate is being impaired, as by cutting standing timber, neglecting repairs, etc. The tenant of a rented farm has the usufruct, but must not impair (with minor exceptions) the substance of the farm. The value of the usufruct in any

given period may be called the usufructuary value, or usance-value, as distinct from the value of the estate, or of the concrete object. We have now to consider how the usance-value is related to the value of the products, be they indirect goods, direct goods, or psychic income.

§ 2. **Usance-value of agents yielding products of like grade.** Consider the simple case where the products are themselves immediately enjoyable goods, such as fruit. The value of the use of the tree is simply the net-value (deducting costs of cultivation, etc.) of the fruit that the tree yields in the season. It is clear that if the farmer has his choice between a tree that yields 30 bushels and one that yields 20 bushels of like apples (this being the net difference after deducting costs), he will value the season's yields of the two trees in the ratio of 3 to 2. The tree yielding the more fruit is counted by so much the better, and relative values are at any given moment expressed by the relative quantities of products.

In a like manner, orchards (groups of agents) may be evaluated. In the San Gabriel valley, as in other parts of California, there is a frostless belt, marked off by a narrow belt of uncertain climate from the lands where, because of the probability of frost, it is quite unsafe to attempt to cultivate the delicate orange-tree and other semi-tropical plants. The usance-values of the orchards show gradations corresponding with the average amount of net products from the frostless belt to the region of frost. In manifold ways differences in geological formation affect the use of land and the success of many industries. On one side of a little creek may be limestone land, on the other shale, and the limestone land produces larger crops and therefore has the greater value. The usance-value is plainly a reflection or derivative of the net-value of the products yielded during the period, and if other things are equal the usance-values of two use-bearers in the same market will differ as do the quantities of like uses which they yield.

§ 3. **Usance-values of agents yielding products of different grades.** If now two agents be compared whose products are equal in quantity but of different grade or quality, the agents will obviously have different usance-values corresponding with the differences in quality. Take a well-known example in the case of land. A peculiar mineral quality in the soil of a vineyard may impart to wine a choice flavor that can at once be recognized by experts, while other fields, distant but a few rods, cannot by any effort be made to produce wine of the same rare quality. There is said to be a marked difference in the success of orchards and of vineyards lying only a short distance apart on the shores of the larger lakes of New York. Nearness to the water moderates the temperature, often prevents frosts, and hence insures the ripening and enhances the quality as well as increases the quantity of the fruit. Where the peculiar nature, slope, or location of the land is found to be the cause of the exceptional quality of its fruits, the land acquires an exceptional usance-value as compared with ordinary land in the neighborhood.

It is the same with the usance-value of all other material agents. The common nag and the thorobred horse, the loom for weaving rag carpets and one for weaving complex designs in silk, the scow and the yacht, are yielding uses which have differing values reflected to them from their final products, and accordingly they vary in usance-value. The same principle applies in the case of human services. The labor-income or the wage obtained by a man for his labor for a definite period is a reflection of the value of that labor to his employer, and eventually to the user of the product. In all cases the usance-value is a derivative.

§ 4. **Effect of the presence of one agent upon the usance-value of another.** Let us now consider the effect which the presence of agents of inferior quality may have upon the usance-value of better agents. It is clear (see Chapter 12) that if two agents are of different grades of excellence, the better agent will be first used; but when there is sufficient

demand, the less efficient agent will be pressed into service. Tho inferior as a whole, it has uses which are better than the lower grades of uses of the better agent, and we can speak of these uses as competing with, or as being substituted for, the more intensive uses of the better agent. Regarding the various uses in both objects as *separable,* we see that the total supply available to meet a given demand is increased by the presence of the inferior agent. The use of the inferior agent limits the utilization of the one of better grade, and therefore limits or lessens its usance-value. If there is but one grade of agent, it is necessarily valued without reference to any lower grade. There may be at first enough of the higher grade of agents to produce all the fruit wanted of the better quality. If, then, there is an increasing demand, and the additional yield can be secured only with more intensive utilization, the value of the product rises. The presence of inferior grades, however, limits that rise, because use can be shifted to them. Within the limits of substitution the poorer grades reduce somewhat the demand for the better grades. The usance-value of the better agents is due primarily to their scarcity and (not less important) to the scarcity of the more effective uses in those agents; but the substitutable uses in other available agents have their part in determining the particular level of valuation in any economic situation.

§ 5. **Usance-value determining utilization.** Both the quantity and the quality of products thus unite to determine the usance-value of an agent. A smaller crop of apples of better flavor on one tree may equal or exceed in value the larger crop of another tree. In this case usance-values of similar things are compared. But through the value of the products they afford, very dissimilar classes of goods may be compared: the apple orchard and the peach orchard, the corn field and the field of potatoes. The constant comparison of usance-values leads to the applying of each agent to the particular use in which it proves itself to have products of the highest value, and to the shifting of the use when a sufficient

change of value takes place in the product. For example, a field used for corn becomes, as population grows, worth more for market gardening than for residence sites, and later becomes worth still more as a business location at the center of trade. The land has various possible alternative uses at any moment, but that one is to be chosen which secures the highest net yield.

§ 6. **Time as a factor in usance-value.** Each instant that an agent is in use may, if we choose, be counted a separate use, and *usance* consists of the sum, or succession, of net uses yielded in some limited period of time, as a day, a week, or a single season. It takes time for the separate uses to be realized. The series of uses bound up in an agent can not be secured at any single moment. If a fruit-tree were permanent, and the owner could wait through eternity for its yield, he would get an infinite yield of fruit. But in any finite period, there can be only a limited yield. When uses of different periods are compared, as this year's use and the next year's use, or the use during some year in the more distant future, another problem is involved, that of time-value. Moreover, time is an element in the comparison of the present values of products that are of various degrees of ripeness or readiness. A wagon can be used in June for hauling a family to the circus or for hauling a load of wood to the home to cook a meal the next December; or a horse may be used for an afternoon's drive, or for dragging timbers to build a cottage to be used for a life-time. Here the usance is in the present, whereas one of the alternative uses is present and direct, and the other is indirect, resulting in future income. Inevitably the element of time enters in most cases into the estimate of usance-value. We must, however, postpone for a few chapters the fuller analysis of this factor.

§ 7. **Usance-value and the margin of utilization.** Usance-value, let us here recall, is a summation of the values of the separable uses contained in a good treated as durable (that is, kept in perfect repair). Its amount depends therefore on

the values of the various, and perhaps numerous, separable uses, or products, some of them direct and others indirect. In this summation are the *values* both of actual and of expected uses. Merely potential uses that, in the existing conditions, are free do not increase the usance-value. Direct goods that were free may, however, become valuable. The poorer qualities of fruit that have been allowed to decay on the ground may now be carefully gathered, while the better qualities are used for special purposes. The total usance-value of the durative agent (the orchard), the value-summation of all the separable uses, would then be greater than it was before.

In the same way when the agents and their uses are indirect there is a point in the gradation from the better to the poorer agents where the materials and forces are left unused. Beyond or below that point the uses of machines, tools, and fields have no value, except for some prospective use. Outworn goods in manifold forms, old pictures, old clothing, having no longer charms even for a rummage sale, a great multitude of things unused and worthless, differing by only a shade from things that still are used and valued, form a valueless margin of wealth. Every rubbish-heap, rag-bag, junk-shop, and garret contains things once prized, now lingering on the margin of use or already become definitely useless.

Recall that there is an intensive margin of utilization, beyond which are certain potential uses in the things that we already have, which, however, in the existing conditions, lie outside the margin of utilization and of value. They may become valuable through any one of many changes in the economic situation. Their use now would involve an expenditure of other agents (labor, materials, etc.) that have a greater value than the product would have. Economic choice should go just far enough and not too far, either extensively or intensively, in the use of goods, if the maximum of usance-value is to be attained.

§ 8. **Usance-value of complementary agents.** In the foregoing discussion we have, for the sake of simplicity, spoken

as if a single product were attributable to a single agent. In reality a situation as simple as this is rare, tho it may occur. Almost all products are the result of the uses of two or more complementary agents.[1] When two or more agents are each indispensable to the existence of a valuable product, the lack of one agent makes the other agents valueless for that one purpose. The product cannot in any case be physically divided into fractions and the parts ascribed to the various agents respectively. But the valuation imputable to each under the existing conditions results from the demand and supply for each in all its uses together. This process of comparison is found even in the individual economy. Robinson Crusoe had to choose how he would apportion his labor (one good) and his limited stock of iron (another good) to make tools (the products). He would not apply all his agents to any one product (as hatchets), but he would, by the principle of substitution, apportion the agents among a number of products, hammers, knives, etc. There are thus, in this simple case, several series of evaluations. First, the successive units of the products from this process, as for example the hatchets, have a decreasing importance. Secondly, the successive units of labor applied to this one product would be limited by their value for other uses. Thirdly, the successive units of iron would have less value applied to this use and relatively greater value applied to different products. Each use is chosen in relation to all the alternative uses presented to choice at the moment, and a scale of values results that represents the equilibrium of choice. The choices may be made in a very imperfect way, but somehow they must be made by every individual working by himself, at whatever simple task. A large part of these choices are made easy through habit, custom, and imitation, by which the general scale of living and the industrial process are largely ruled.

When men come together to trade in markets, the problem of evaluating complementary agents becomes in some respects

[1] See above on complementary goods, ch. 4, sec. 5.

more complex, because of the variety of labor and of uses; but in some respects it is easier, because of the existence of current prices for all things, serving to give more exact expression to the value of alternative uses. Flour and water are needed to make bread.[2] Assume that a loaf of bread has a value of 10. If the water is a free good, the flour has imputed to it the whole value of 10; but if the water needed is valued at 1 for some other purpose, as for sale at a price, then some readjustment of other values must take place. Either the value of the flour falls to 9, or that of the bread increases to 11, or an adjustment midway between these values is made. In this way occurs the adjustment of the value of complementary agents, each being valued in relation to all the other uses to which it could be applied. The total price of the products evidently must closely conform to the total price (actual, or estimated) of all the agents entering into the products. This measurement of money-costs and their adjustment to prices we shall have to study more fully later under "cost of production."

[2] Ignoring here for the moment, labor, yeast, salt, fuel, etc.

CHAPTER 14

THE RENTING CONTRACT

§ 1. Price of the separable use. § 2. Medieval land tenures and the usance of land. § 3. Land destruction and repair. § 4. The medieval rent-charge as a sale of income. § 5. Definition of the renting contract. § 6. Renting of agricultural land. § 7. Renting of urban real-estate. § 8. Renting of dwellings. § 9. Renting of real-estate for business uses. § 10. The renting contract in other cases. § 11. Buying the usance without the renting contract. § 12. Unsuitability of the renting contract in commerce. § 13. Definition of rent. Note on Various meanings of rent.

§ 1. **Price of the separable use.** Wherever there is a thing of value there is a chance that trade will occur between men, and that a price will result. In our discussion of price above (Chapter 7) we fixed our attention upon those cases where concrete objects with direct uses are traded as wholes, such as loaves of bread, apples, and horses. The owner of such a commodity must usually sell the whole object if he is to sell the uses that it contains. The price is built upon the valuations—in the minds of the various traders—of the totality of uses contained in the goods. Now the valuation of the uses separately—the conception of usance—makes possible the problem of price in a different form, that of the buying and selling of the separable uses, leaving the ownership of the durative agent unchanged. The simplest way to buy the uses of a thing would seem to be to buy the use-bearer outright—boat, horse, house, land, with all its uses. But the sale of the separable use may under some conditions be simpler and more advantageous to both parties than the sale of the use-bearer itself.

§ 2. **Medieval land tenures and the usance of land.** Doubtless the perception of this advantage led to multitudes of

loose bargains for the use of personal belongings in earlier conditions of society;[1] but the first great development of usance-trade was in the case of land. In ways and for reasons which need not be described here, land ownership in all the early civilizations was bound up with certain political rights and dignities. The land was not a personal possession, it could not be sold outright (in most cases); it must be passed on to the heir and successor of the landlord. The landlord got his income from those to whom the land-uses were granted. Even as late as feudal times in medieval Europe the whole social organization was built around land tenures.

Land and the things pertaining to it, such as ditches, houses, mills, cattle, and stock, constituted the wealth of the rulers and landlords. Land was granted to the vassal, or to the tenant or to the serf in return for produce, and for services, some military and some agricultural in character. The contract, expressed or customary, was known and carefully interpreted in all its items. The tenant was held strictly to his duty to keep the land in nearly undiminished fertility. A certain mode of using the land was enforced; certain limitations were placed upon the use of pastures, of forests, and of fields. Moreover, the tenant had an interest or equity in the land because the rent he had to pay was fixed by custom, not by competition, and always, probably, was less than a competitive price would have been. The landlord, therefore, could count in good part on the undiminished power of his land and stock from one year to another.

It would be a mistake to see in these early and medieval relations between a king and his vassals, and between land owners and the serfs on their estates, more than a vague and embryonic form of rent-contract. Political rather than economic relations were dominant; it was a time of status rather

[1] See on the lack of definite notions of price among fellow-members of tribes in primitive society, selections from Herbert Spencer and from Sir Henry Maine, in the "Source Book in Economics," pp. 3–14.

than of free contract.[2] Originally in taking the land and pledging loyalty to his feudal superior, each vassal, high or low, assumed pretty definite obligations, some of a military, others of a political, others of an economic nature. But thereafter in the thought of that time there was but vaguely present the notion of contract in the modern sense as regulating the economic relations of the descendants, peasant and landlord, or landlord and his feudal superior. "Each man took his place in accordance with inherited and forced, rather than free, contracts."[3] But gradually there developed a more modern form of agreement between the owner of land and the tenant. Rent-payment by the tenant and wage-payment by the landlord for any work done on his domain by the peasants were counterparts in this development in which contract was gradually displacing custom, status, and inheritance.

§ 3. **Land destruction and repair.** It has been seen that all economic agents, considered as wholes, are more or less consumptive, and more or less durative.[4] In practice and in theory they may be treated as either the one or the other. They may be treated as consumptive by letting them wear out, while spending all their uses within a certain period; thus are used food, fuel, lubricating oil, lights, and sometimes tools and machinery. All their value is looked upon as transferred to, or realized in, the product, in that period. On the other hand some goods are given, by means of repairs, an artificial appearance of durability, so that the whole agent is treated as having the durability of the most enduring part of it. It was in this manner that agricultural land came to be looked upon as indestructible.[5] As mere land surface, or loca-

2 For a description of the conditions prevailing in England just before the Norman Conquest in 1066 see Cunningham, "The Growth of English Industry and Commerce," vol. I, p. 10 ff. The conditions, as he says, are "difficult to describe in modern terms, as these connote distinctions which only emerged at a later date."

3 Cunningham, *idem*, p. 129.

4 Review in general ch. 11 on Consumption and duration.

5 See especially ch. 11, secs. 7, 8.

tion on the earth's surface, it is, except for rare catastrophes, such as earthquakes, volcanic eruptions, and floods, well-nigh everlasting in the view of mortal man. But it is something more than mere location that makes land useful, whether used for agricultural, forestry, quarrying, or mining purposes. Used for these, and even for residence and commercial purposes, it is quite capable of being used up and destroyed as a use-bearer. It is in large part not nature but man's art in the careful use of land that enables it to be looked upon as an indestructible agent, yielding a permanent series of uses. A form of contract came to be used in letting the land for hire, that called for the return of the land in as good condition as when it was taken. The tenant had to replace the elements of fertility which he used up. It is clear that the main thing he buys from the landlord is what we have called the *usance* of land; but as he usually takes something more (through failure to repair and because of inevitable depreciation) he pays for this an additional price included in the gross rent.

§ 4. **The medieval rent-charge as a sale of income.** It thus came about that land, tho not as an economic good indestructible, was nevertheless in many cases so managed as to yield a continuing income. In medieval times this income or rent was realized in products and services, not in money. The fruits of the soil were consumed on the spot instead of being sold as now. Land was thought of as a place on which the tenant could live and from which the landlord could draw an income. The medieval estates were so tied up by legal conditions that they could not be sold outright, so means were found of doing practically the same thing. The owner, in some cases, mortgaged the annual rental by selling a *rent-charge* upon it. A rent-charge was an annual sum payable (in perpetuity or until redeemed) out of the yield of an estate. Thus, in the Middle Ages, not the land itself, the mill, the market rights, the forest, etc., were subject to trade, sale, and contract, but merely the usufruct, as a whole or in part, for a

definite period. The sale of rent-charges has now only a historical interest, as loans now are made in other ways, the land being pledged as security for repayment. After this brief survey of the old land tenures we turn now to the modern method of selling the use of wealth of various kinds under the form of the renting-contract.

§ 5. **Definition of the renting-contract.** The renting-contract is the agreement of a borrower to pay a specified price for the use of a thing and, at the end of a specified period, to restore it in good condition or pay for its repair. In practical business it is necessary to have definite agreements to prevent disputes, and whenever a thing is rented there is a contract, either implied by custom or formally made, orally or in writing. The terms are all specified; the duration, whether for a day or perpetual, or at the pleasure of either party; the rent, whether cash, share of the produce, definite or contingent on some events; taxes, insurance, and repairs, what and how much to be done by either borrower or lender. In the case of things other than land, many other details must be specified. Some of these details may be merely implied in a higher gross rent, which covers ordinary wear and tear, ordinary risk of breakage, fire, etc., and ordinary risks of every kind (e.g., rent of piano, of theatrical wardrobe), the borrower being liable, however, for unusual carelessness in use.

The form of the renting-contract is observed by men in estimating the uses of their own wealth where no contract exists. If they count the gross product of an agent as a net-usance, it is bad bookkeeping. In many cases it is necessary, therefore, for owners to observe the form of the renting contract in order to determine the net yield of durable goods.

§ 6. **Renting of agricultural land.** The employment of the renting-contract is determined by its advantages and disadvantages under particular conditions as compared with other business methods. Even in the renting of land for agriculture, the difficulties of the contract are great. It calls for a

personal oversight that is burdensome to the landlord and annoying to the tenant, to make sure that repairs are made, that straw and hay are fed on the place so that the soil may not be impoverished, to ensure the purchase of other fertilizer according to the agreement, and hundreds of other details. The practice of making long leases obviates some difficulties and aggravates others. If improvements made by tenants revert to the landlord at the expiration of the lease, as was formerly the case in Ireland, there is little motive for enterprise; and if tenants' improvements must be bought by the landlord, there are many occasions for dispute. Under fairly unchanging conditions as to prices and markets, long-time leases may be equitable; but during the wavelike change of food prices in the nineteenth century long leases increased the hardships to tenants in all countries in Europe and America. Despite these drawbacks, agricultural lands with their improvements continue to be largely rented, both in Europe and America. Of the nearly 6,400,000 farms in the United States in 1910, owners occupied 62 per cent, hired managers ran 1 per cent, and tenants operated 37 per cent (24 per cent renting on shares of the produce, and 13 per cent for cash). There were 2.3 million farm homes rented in 1910. But in America and Australia, far more than in the older countries, land changes hands by sale, and many persons prefer to go into debt for land, giving a note, secured by mortgage, and paying interest on the loan, rather than to pay rent.

§ 7. **Renting of urban real-estate.** The class of wealth that is now proving to be, on the whole, best usable under the renting-contract is land and buildings in urban locations. On the whole the difficulty of ensuring the durative character of city real-estate (land and building taken together) is less than in the case of agricultural real-estate. The land being used solely as solid surface, standing room, and not at all as a source from which the chemical elements of fertility are extracted, is (except in the most rare cases of floods and earthquakes) subject to no such physical deterioration. The build-

ings, however, make up a large part of the value of urban real-estate, and in many cases they are subject to depreciation and to dangers. The greatest of these dangers, that from fire, can be guarded against by insurance and thus converted into a regular cost of maintenance. Damages by rough usage may be offset by higher charges to the tenants. Rentals charged to careless classes of tenants, or to careless individuals, often are fixed higher than rentals to careful tenants. By these means and by careful oversight, tenements and residences, which have a large measure of consumptiveness, can be treated as durative agents more easily than can agricultural lands.

§ 8. **Renting of dwellings.** There are in many cases strong reasons why it is to the interest both of the owner and of the tenant to bargain for the transfer of the usance rather than of the fee-simple (complete right of ownership) of city residences. With many changes in the modern citizen's business and social conditions, thousands of families are often absent for a time from their regular place of residence, and while letting their own houses to tenants, they become tenants in the houses of others. Often the tenant may be a rich man who could easily buy the house, if hiring it were not more advantageous. Every year many thousands of winter homes of owners are let in summer while the owners are away, and many thousands of summer homes usually occupied by the owners are let where the owner is prevented by ill-health, or by business plans, or by travel from occupying the home himself, or is led by the desire for a change to go to some other place for the summer. The uncertainty of employment for professional, clerical, or manual workers, makes the buying of a house of doubtful wisdom in many cases, even where it would be financially possible. There are thus millions of families that are not would-be buyers of houses, but are nevertheless buyers of the uses of houses. There were 8.4 million homes other than farm homes rented in 1910 in the United States (that is homes in cities, villages, and the country dis-

tricts, not occupied by one operating a farm). This demand is far beyond what can be met by the chance vacancies of owners' regular dwellings, and it offers a field for a very safe

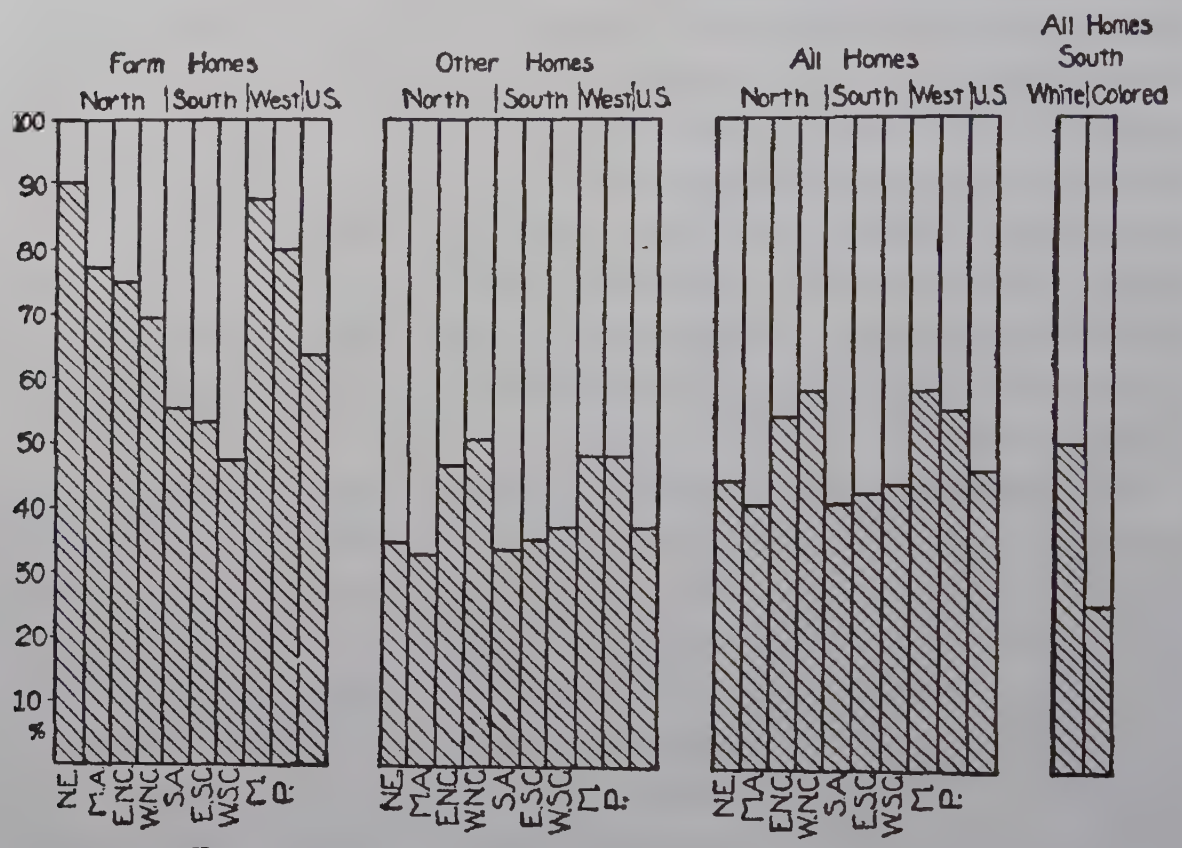


FIG. 23. HOME OWNERSHIP IN THE U. S., 1910.

A number of significant facts are here shown graphically. In every census division a larger percentage of farm homes is owned than of "other homes." A larger percentage of farm ownership is found in every northern and western division than in any southern division, New England being highest and the Mountain and Pacific divisions following in order.

The last two columns show the small percentage of ownership by colored occupants in the South, this explaining largely the small percentage of ownership in that section both of farm and other homes.

In every division "other homes" are owned in smaller proportion than are farm homes, the contrast being greatest where the urban population is largest, viz., in New England and the Middle Atlantic states. The North Central, the Mountain, and the Pacific divisions all rank high in ownership of other homes as well as of farms, and the southern divisions rank low in both.

kind of investment under their personal oversight for persons of small or moderate means.

§ 9. **Renting of real-estate for business use.** The renting-contract has marked advantages in the hiring of shops, stores, and office-buildings in cities. There the land has a well-nigh absolute durativeness, and the buildings may be built of very durable materials. Merchants often find it of advantage to move into larger quarters as business grows, or into a different neighborhood as the center of trade changes. Moreover, as active business men they often can keep their funds invested to better advantage in their business than by putting them into the purchase outright of a store-building, as the rate of yield on real-estate investments is usually less than that in commerce and manufacture.[6] Many small mercantile businesses require only a small space, less than could be bought or built on to advantage in a large city, and many agents and professional men need merely office space. This large and regular demand for shops and offices calls forth the enterprise of investors to construct and maintain suitable buildings to let for these purposes. Hundreds of millions of dollars of the funds of life insurance companies, collected from policy-holders, are invested in this way, as well as funds of educational institutions and of business corporations. Thus it happens that many corporations with millions of capital are in the larger cities tenants in offices owned by other corporations which own office buildings, such as the *Times* Building, the Metropolitan Life Insurance Building, the Singer Building, the Woolworth Building, the Equitable Building, in New York City. The very size of such office buildings and their conspicuousness in public attention give to the offices in them an advantage in convenience of access and for advertising purposes greater than is possible under other circumstances.

The rapid changes that are going on in America bring about most varied conditions of ownership and tenancy in regard to urban industrial real-estate. Manufacturing on a small scale is often started in rented buildings even in small towns, and

[6] See ch. 26 on Enterprise.

in the large cities this is more common. But the larger manufacturing firms and companies usually own the building and land in which their manufacturing is done. The special character of the machinery used and of the buildings required make this the better plan. Even then, however, the need of expansion often leads to the hiring of additional land, buildings, and offices. The extent to which the renting of real-estate for business purposes is practised now is thus in the aggregate enormous.

§ 10. **The renting-contract in other cases.** There has always been a strong motive for the renting of smaller objects of movable wealth, rather than their purchase outright, wherever the user has a need of an agent in an unusual place, or a temporary need of an exceptional nature. The traveler wishing to cross the stream needs the boat but once, and many other travelers will pass the same way having the same single-time need. Usually the payment in this case is in the form of a fee for both the boat and the ferryman's services. The farmer would like to have an extra horse for a few days each year and can afford to pay well for its use, but could better go without the horse those few days than have the expense of keeping it throughout the year. He may gain greatly, however, if he can hire a horse at such times.

A hack or a taxicab is hired by the hour, a carriage from the livery stable by the day, a bicycle, a sewing machine, a typewriter, by the day, week, or month. Boats, guns, tents, jewelry, even diamond engagement rings, yield their joys under the renting contract. People frequently hesitate between the renting and the purchase of a piano, and in some cases renting is the more convenient and desirable way of securing its use. The purchase of a dress-coat or of a masquerade-suit to be worn but once, involves for some persons a needlessly large expense, when for a moderate sum the temporary use may be had, and the article may then be returned, little the worse for wear, to the accommodating clothier.

§ 11. **Buying the usance without a renting-contract.** When the owner or his employee has charge of the agent and directs it, there is usually not a renting-contract, altho the purchaser is buying the usance. When the use of the machine is a minor element, the transaction takes the form of hiring the man's services, while he furnishes the needed machines. Thus the cabman, the truckman, the ferryman, the bootblack, the carpenter, are hired and paid for their labors along with the use of the wagon, horse, boat, brushes, and tools. These cases are midway between the hiring of a material use-bearer and the hiring of a laborer, having something of the nature of each. A case of the same kind on a large scale is seen in transportation by railroad or by steamship, where the passenger is getting by one payment a great complex of uses, of fuel, engines, machines, car or ship, services of engineer, seaman, conductor, or captain. It is a step further to the case where the customer buys the product of a factory. The sale of the yard of cloth is the sale of the raw materials, the uses of building, engines, looms, and the labor of various employees, all combined in one product. In some cases the usance (as of craftsmen's tools) is sold under a labor- or wage-contract; in other cases (as of boats and trains) it is sold under a transportation contract, the price becoming chargeable as the usance is given; in other cases (as in manufacturing and mercantile business) the price of the usance is included in the contract of sale of products which the uses of agents have at an earlier time helped to produce. In none of these cases is there a renting-contract, for possession of the agent is not delivered to the buyers of the use, and the owner continues to be responsible for the repair and operation of the agent. It is merely a matter of convenience, reflected and fixed in custom, whether sale of usance shall be under the renting-contract or under some other form. With more or less of difficulty and of advantage its use might be extended to the borrowing and lending of many classes of goods where it is not now used.

§ 12. **Unsuitability of the renting-contract in commerce.** The renting-contract has always proved to be unsuited to most transactions of commerce and manufactures. As these classes of industry were developing rapidly in cities near the end of the Middle Ages and throughout the sixteenth, seventeenth, and eighteenth centuries, borrowing and lending in the form of or in terms of money was more and more employed, and in this respect there was a striking contrast between city industries and agriculture, where the renting-contract was almost universal.

The materials and appliances needed for manufacture and commerce are so manifold, and are so varying in quality, that the renting-contract is very cumbersome and difficult to enforce. A merchant embarking on a trading journey would find great annoyance in renting a ship and a stock of goods. He must agree to repay the loan in goods of the same kind and quality as those received, a contract most difficult to interpret and execute, and giving occasion to costly tests and countless disagreements. It was much easier for the merchant if he had not means enough for his enterprises to get others to go in on shares (a very common method) or to obtain a loan under the interest contract, i.e., either a money loan, with which to buy the goods, or an agreed price in money for all the goods borrowed. With the growth of industry and commerce, wealth increased in towns, more and more taking the form of goods which could not conveniently be rented, such as ships, wagons, tools, and stocks of merchandise.[7]

[7] This simple difference in practice created and long fostered an illusion in the minds of economists, that land-rent was an income of a peculiar nature, governed by quite different laws from those that govern the income yielded by the machines, tools, and other agents in manufacturing and commerce. Various curious explanations of this contrast were given, all resting on the notion of some inherent differences in the kinds of goods, rather than in the form of contract. Traces of this notion still appear in the classification of wealth into land and artificial agents (often called capital) and in the assumption that rent and interest must in the very nature of things proceed from different classes of goods.

§ 13. **Definition of rent.** Let us now consider the term applied to the payment made under the renting-contract. The word rent comes from the Low Latin *renta* from *renda,* or *rendita,* in turn from *redditus,* that which is given, yielded, given back or returned. The French *rendre* (English render), to give or return that which belongs to one, was used very early. Chaucer used "rente" as income: "Cattle had he enough and rente," "cattle" probably meaning chattels (goods, wealth) and "rente" meaning income. The larger incomes of that time were derived as payments from vassals or tenants of estates. Rental is a collective term for a number of rents; the total yield of an estate was called its rental, and a list of the various sources of income, including all payments due from tenants in money, produce or services, constituted its rent-roll.

The word rent has continued to be used popularly as the amount paid by one person to another for the use of material things which must be returned to the owner after the time of use agreed upon. We speak of the rent of a house, boat, etc., using the word as a synonym for hire. In the European languages the word is used generally in that sense, tho with various shades of meaning. In French *la rente* means the income from any kind of property; but corporate securities and national bonds particularly are called *les rentes* (probably because they are a form of investment yielding a permanent income), and one who has a fixed income from rents is called a *rentier.* In German the term *Rente* is used more broadly than in English, as an income of any sort, *Grundrente* meaning the rent of land, and *Capitalrente* (like *Capitalzins*) the income usually in English called (according to conditions) either dividends or interest.

With this usage and the problem in view, we may define *rent* as the price paid for the temporary possession and use of a more or less durative agent which is to be returned to the owner at the end of the specified period. Thus broadly understood, rent as a contractual payment includes not only

the price of the true usance, but usually also something more to cover repairs, wear and tear, services of the owner in preparing and taking care of the use-bearer, collecting the rent, etc. It is useful to distinguish between the whole payment, the gross rent and the true, or net, rent which is that part of the payment that is left, after making due allowance for all the other items of cost. *Net rent* is the estimated price of the net usance.

In the next chapter we have to examine how the general principles of price are exemplified in the problem of rent.

NOTE

Various meanings of rent. Various other meanings have been given to rent as used in economics which may be called to the student's attention that he may be on his guard against misunderstanding. The English economists from Adam Smith on restricted the meaning to the most striking of the cases of rent, as seen in their day, and defined it in the words of Ricardo as: "The price paid to the landlord for the use of the original and indestructible qualities of the soil." Most of the landlords of England did not themselves cultivate the soil, and their incomes were paid to them by tenant farmers. Where lands were cultivated by the owners, there was a value in the use of the land considered logically apart from the value in the cultivator's own labor and from other costs; in other words, there was a usance-value in the land, and economists, having no name for this, widened the application of the word rent to include this as well as the price paid to a landlord. But they did not widen it to include the usufructuary value of other agents, and thus they contrasted rent with interest from money loaned, with the income (called by them profits) from agents employed in commerce and manufacture, and with wages of labor. The authority of this definition of rent has rapidly waned since criticism has shown its accidental origin and its illogical limitations. When it was recognized that there was a difference between the usance of an agent to the owner and the price paid to him by another for its uses, the attempt was made to call the former *economic* rent and the latter *contract* rent. But this has proved to be confusing and has never gained a place in popular usage. In business practice the term rent is rarely if ever applied to the usance, but only to a contractual payment for the use. In the attempt to remedy the lack of logic in the definition some economists have widened the term to indicate any advantage secured in exchange (the margin of advantage), using such

expressions as consumers' rent, producers' rent, buyers' rent, sellers' rent, and thus have lost all touch both with the original economic definition and with popular usage. Our analysis puts an end to this variation and inconsistency, by its identification of the separable use as the object of valuation. Thus usance and rent are seen to be the value and the price aspects of the same problem.

CHAPTER 15

PRINCIPLES OF RENT

§ 1. Divergence of actual rents from competitive rents. § 2. Gross and net rent to the owner. § 3. Different grades of fertility as affecting rent. § 4. Different costs of cultivation as affecting rent. § 5. Differences in location as affecting rent. § 6. The general doctrine of rent. § 7. Dependence of rent on proportionality. § 8. Rent and intensive utilization. § 9. Divergent subjective valuations of different bidders. § 10. Example of competing bids. § 11. Complexity of the situation lying back of each bid. § 12. Personal efficiency as affecting the valuation of agents. § 13. Variability of rents.

§ 1. **Divergence of actual rents from competitive rents.** Every rent paid by one person to another grows out of some agreement, explicit or implied, between two parties, and in a very general sense may be called a contractual payment. But the agreements in force at any moment differ in regard to the time that has elapsed since they were made, in regard to the conditions that existed when they were made, and in regard to the changes that have taken place meantime affecting the value of the uses of the wealth. It must often happen, therefore, that the rent which the borrower is obligated to pay is either more or less than the usance-value as estimated at the present moment. It is necessary to distinguish, therefore, the terms customary rents, lease rents, and competitive rents. A competitive rent is the rent that is (or would be) arrived at under the free operation of the actual competitive market conditions.[1] A large part of the rents actually paid, especially for lands and houses, are not at this rate, but at a rate determined at an earlier date and under more or less restricted competition. Some may be customary rents which

[1] See ch. 8, Competition and monopoly.

were fixed in former generations and are not subject to revision. Custom, in the case of a large part of the land holdings of the older countries of Europe, Asia, and Africa, prevents the landlord from charging all that the usance of the land is now worth. Presumably, when the feudal agreements were made in Europe a thousand years or more ago, there was a rough equivalence in the benefits accruing to the landlord and the tenant, respectively. In cases where the customary tenant and his descendants have the right to continue at a rate below a competitive rent, the tenant is to some degree a sharer in the ownership; the value of the usufruct is divided between the two parties. In communities where customary rents are common, a rent of the full annual value of the tenement, or near it, is called a rack rent. It often has resulted from some encroachment by the landlord upon the tenant's rights, and therefore the term has an evil implication.

In other cases, notably in England, leases of agricultural land are made for periods as long as 30 years, and the tenants have often been the losers because, before the end of the time, the prices of agricultural products had fallen. Even in America city land is sometimes leased at a quit-rent for 99 years, and railroads are leased to other railroads for 999 years. Here the contractual rent actually paid each year varies greatly from what the competitive rate would be if fixed annually. The annual rent agreed upon at the signing of a long-time lease is not likely to be the competitive rent of the then current year, but rather an equalization of the varying rents of the whole period, as forecast by the bidders for the agents. Divergent actual rents for the same grade of agents may therefore exist side by side, according to varieties in customs and contracts.

§ 2. **Gross and net rent to the owner.** The renting-contract is rarely found in its pure form. Rarely is the borrower, or tenant, required to keep the agent in perfect condition; therefore when the rent is fixed, a certain amount of repairs and some provision for ultimate replacement is allowed

for and included. The house-owner usually has to look after the fire insurance, nearly always has to pay the taxes, usually has to reshingle, repaint, and repaper from time to time, has often to employ a janitor, and where there is an elevator, to pay for its operation. Evidently the rent must cover all these items before we can speak of the remainder as a net income to the landlord. A large part of the rent of boats received by some boatmen is used to pay their attendants and the rent of the docks they use; and a considerable part of the rent received for the docks is expended by the owners to replace rotting piles and boards and otherwise to keep up the repairs. The owner nearly always has in mind certain costs of the business which must be deducted from the sum spoken of as rent. This difference between the borrower's view and the lender's view must not be overlooked in any specific case. The borrower's idea of rent is what is generally understood by the term rent in a contract, namely, the amount he pays; the lender's idea of rent is often the corrected amount, the net-rent which is attributable to the sale of the usance of the particular agent. This sum, since it is the price of the usance, is an absolutely net income. As far as can be foreseen it is an income "in perpetuity," that is, accruing each year and likely to accrue each year into the indefinite future. But whether a given contract rent is gross or net is immaterial for our present purpose. In either case its amount is determined in the same way that the market price of present direct goods is determined. (See Chapter 7.) It is the resultant of individual valuations which, in a true market, mutually influence each other, and generate a market price. It is the price which brings as near as possible to equilibrium the amount offered and the amount demanded.

§ 3. **Different grades of fertility as affecting rent.**[2] The theory of rent, as usually presented, deals with very simple

[2] Everything here said of fields as agents may be said *mutatis mutandis* of any other class of agents which are of different grades or which are used with different degrees of intensiveness.

conditions, which may be illustrated as follows. Assume that there are several fields, all equally accessible to the market, and all requiring the same amount of labor and of materials for their cultivation. With a small population only the most fertile tract A would be tilled and there would be no rent. As soon as it became necessary to cultivate B, a rent of two bushels an acre would begin on A. Just as it became necessary to seek a part of the food supply on D, the rent on the C tract would be two bushels, on B would be four bushels, and on A would be six bushels an acre.

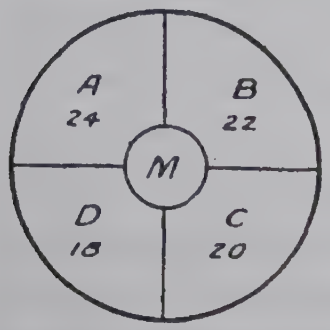


FIG. 24. GRADES OF FERTILITY.

§ 4. **Different costs of cultivation as affecting rent.** Or changing our hypothesis we may suppose, in accordance with some cases that actually occur, that all the tracts yield practically the same gross product per acre, say 24 bushels, but require different outlays per acre because of hills, rocks, needs of supplying fertilizer, or any other reason. Under these conditions the rents would be the same as in the other case.

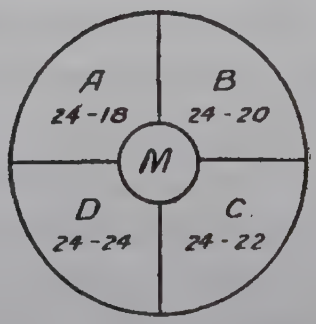


FIG. 25. DIFFERENT COSTS OF CULTIVATION.

A yields 24 bushels less 18 for costs, rental, 6 bushels.
B yields 24 bushels less 20 for costs, rental, 4 bushels.
C yields 24 bushels less 22 for costs, rental, 2 bushels.
D yields 24 bushels less 24 for costs, rental, 0 bushels.

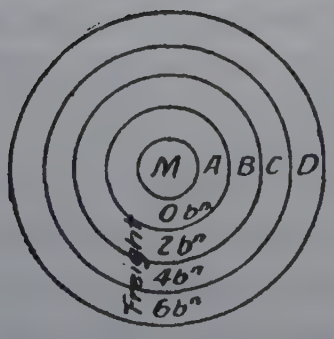


FIG. 26. DIFFERENCES IN LOCATION AND FREIGHTS.

§ 5. **Differences in location as affecting rent.** Still another case is presented when fields are of equal fertility but are at various distances from the market where the product is used and the price is fixed. Assume that the costs of transportation to the market are equal to the differences in the cost of cultivation in the last case. This is represented in

Figure 26. When it becomes necessary to resort to tract B for products on which the transport-costs would be two bushels per acre, a rent on A would arise equal to the freight charges; and so on as in the preceding examples.[3]

§ 6. **The general doctrine of rent.** The principle in each of these three simple cases is reducible to the one proposition, that the rent (in money) of an agent is equal to the excess of the price of its gross products above (money) costs (other than the rental) needed to obtain them and take them to market. This is equally true when the three conditions are combined in varying proportions, the excess being partly due to a larger product, and partly to lower costs either of cultivation or of transportation.

The comparison of quantities of products might be made in terms of bushels, pounds, tons, yards, etc., provided that

[3] It need hardly be said that this figure represents a formal regularity of gradations of freight rates not to be found in reality. This is a schematic representation, not an actual photograph. If a navigable stream or a good turnpike, or a railroad, should run from D to M, then a point such as D more distant from the market in miles, would be much nearer, measured by costs, than would a point 2b from which goods must be drawn in wagons over dirt roads. The general principle is valid when expressed in reference to money-costs rather than with reference to actual miles; that the price of the usance conforms to the net price of the product after paying the cost of bringing it to market.

It must not be thought that in these examples the order in which cultivation proceeds from more fertile to less fertile, from more easily to less easily cultivated, from nearer to more distant fields, is intended as a historical account. This, too, is merely *schematic*. Changes in the methods of agriculture may cause some kinds of fields to become less, others more productive at a later stage than when first taken into use. Tracts A and B might be first taken up because of greater fertility (in Figure 24), or of ease of cultivation with the tools then used (Figure 25), or on account of nearness to the market (in Figure 26); and later after drainage, or with the invention of better tools, or after a new road had been built, tracts C and D might be found more productive than A and B. We are not concerned here with the historical order of change, but with the point of equilibrium of competitive rent under any given set of conditions.

all of the products were of the same kind and quality. Likewise the comparison of costs might be made accurately in terms of day's labor provided labor were the only cost and were all of the one kind and value. But these conditions are rarely, if ever, present. To compare the items, therefore, it is necessary to express them all in common terms of monetary prices. A comparison may thus be made between the most varied products, and between costs of most varied kinds and the most varied kinds of agents.

The commercial rent paid by the user of a durative agent of any kind is a gross sum which usually is more (or conceivably may be less) than the price of a true usance, according as repairs and depreciation have been attended to by the borrower (see Chapter 14, section 3). A net or true rent, however, is that which leaves the use bearer in condition to yield an unchanging income (see above, section 2).

§ 7. **Dependence of rent on proportionality.** It may here be clearly seen that the origin and the existence of rent is dependent on the operation of the law of proportionality. If intensive use of field A met with no resistance there would be no motive ever to cultivate another field. A whole nation could be fed from the single acre of land. But in fact, applying more and more labor and other agents to tract A will not increase the crop of grain proportionally. In applying any fund of complementary agents a point is found where it is better to go over to the cultivation of the tracts B, C, D, successively, each less fertile (case 1), or more difficult to cultivate (case 2), or less accessible and costing more for transportation (case 3), than to go on cultivating tract A with more and more labor or, it may be, at higher and higher money costs. When this is done the return imputable to the *additional* (marginal) unit of cost on the intensive margin of cultivation in A just equals that of the additional unit on the extensive margin of B, C, D, etc. There comes about a *static equilibrium,* a best apportionment of agents to the different tracts under the existing circumstances.

This best apportionment of complementary agents has, of course, the result of maximizing the net incomes from the various tracts. The better agents are more intensively cultivated than the poorer agents for the reason that in this way labor is most advantageously utilized. This difference in degree of use appears generally in the form of differences in the kinds of products as well as in the amounts, each agent being used for the purpose in which it promises to yield the maximum usance, and, consequently, rental. A may be given to commerce, manufacturing and residences, uses of varying degrees of intensiveness; B, to market-gardening, C, to ordinary farming, D, to grazing, forestry, and other extensive modes of use. And the simple guiding principle in the matter is this: that each thing is put to the use which seems to promise the maximum income. This, of course, is true of labor, buildings, tools and machinery of all kinds, as well as of land.

§ 8. **Rent and intensive utilization.** The origin and existence of usance-value and hence of rent is essentially due to the limitation of supply of uses in the better grades and not to the existence of poorer grades forming an extensive margin of utilization. If A were the only grade, rent must arise when it is used intensively. If in accordance with the principle of proportionality the successive units of labor (or of all money costs) are applied so that they become less effective, usance-value must arise. If now, B is there waiting to be used, the rent on A would have to equal about 2 bushels per acre before cultivation could go over to B. The effect of the presence of the poorer grade B, is not to cause the rent on A, but merely to check the rise of usance-value through affording a substitute good. And so, in turn successively lower grades of agents become part of the supply as rent rises, and thus they limit its rise. The problem of usance-value and of rent here touches on the border of the problem of the value of the complementary agent, labor, and may better be explained under wages.[4] Rent is not an iso-

[4] This is the same principle explained above under usance-value,

lated price problem, but it is interrelated with that of the prices of all agents uniting to obtain a product.

§ 9. **Divergent valuations of different bidders.** In explaining the differences in the rents of agents we have thus far mentioned as affecting the result only the limitation and variation in the physical qualities of the agents themselves, whether it be the fertility of the soil, the height of the waterfall, the mechanical efficiency of the machine, the convenience of location, or anything else. These are solely objective differences, whereas there are many subjective (that is, human, personal) differences that influence the result, causing the individual bidders, either borrowers or lenders, to value a particular usance differently.

It has been shown how the valuations of bidders vary in the purchase of commodities, and it is no less true that the valuations of bidders for usances vary. Many circumstances make both the quantity and the value of the products as well as of the costs anything but a fixed, predetermined, unchangeable amount to the various bidders. A durative agent often has to its owner both a value-in-use and a value-in-exchange, a usance and a price, and the two may be approximately equal or very unequal. The owner of a farm may work it himself, or being old, or indolent, or incompetent, or more suitably occupied, he may prefer to let the farm to a tenant. Where the owner can himself manage the farm he has a reserve-valuation below which he will not let it to any tenant; whereas in the other case he is in the position of an urgent seller (of the usance) to the highest bidder (quality of tenant, security, etc., as well as amount of rent being considered). This does not mean that the rent is necessarily lower when the owner can not use the agent himself. The owner's reserve-valuation may often be below the bid of others.

ch. 13, sec. 4, Effect of the presence of one agent upon the usance-value of another. Essentially it is the principle of substitution; see ch. 4, secs. 2–4.

§ 10. **Example of competing bids.** If there are several tenants that would like to get a certain farm, their maximum usance-valuations might be as follows: A, $500; B, $475; C, $450; D, $425; E, $400. At the basis of each bid must be a forecast of the net usance that the bidder anticipates he could make from it; but he may bid less if he thinks that he can thus get the agent. Each bidder would count his own labor at the figure it would bring if elsewhere applied, and would estimate some return on whatever stock he expected to put into the business. Many factors of psychic income, varying with individual tastes, as liking for the neighborhood, conditions favorable to health, nearness to schools, etc., enter into the actual bid. With due allowance for these differences, A, who counts on a net usufruct of 25 more than B does, ought to be the more skilful farmer, but this is merely his expectation, and he may be mistaken. Even in this case, if A can give security or can convince the landlord that the rent will be paid, he may be able to outbid B and get the farm for a rent of $476. Then, if his forecast was correct, he would clear $24 by renting this particular farm; and in addition he gets the opportunity to apply his own labor and earn returns on his productive agents. This situation is represented in Figure 27.

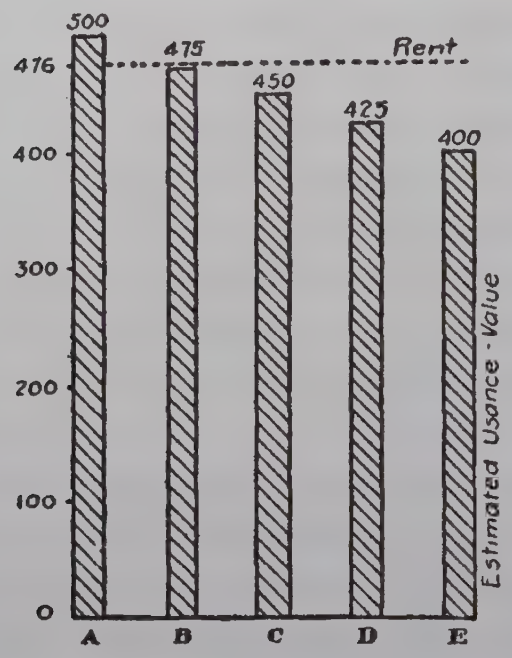


FIG. 27. COMPETING BIDS OF WOULD-BE TENANTS.*

§ 11. **Complexity of the situation lying back of each bid.** It should be noted that each bidder's valuation implies a com-

* The various bidders for the usance of a particular agent have different valuations, A to E. The valuation of each bidder is his estimate of the total yield less the other *costs* of obtaining the products.

parison of the agent with other agents more or less nearly equal to this one in its qualities and usance. The opportunity of a place to work, needed by each, would be lacking if there were but one farm to rent. But several farms are in the neighborhood, and the knowledge of their availability is a part of the circumstances influencing the bids, as is also the chance that each man has of moving elsewhere or of hiring out for wages. If in fact there were but one farm and no other possible place to earn a living, the maximum bids would rise greatly, for each bidder would reduce to the uttermost his estimate of the value of his own services to be deducted from the gross product. The interrelation between the amounts attributable to labor and to the farm is such that rent and wages mutually affect each other. In fact, as bids are made in view of an existing situation, rents reach some degree of equilibrium in a neighborhood. Each tenant has a farm and each farm a tenant, rents and tenant's income being kept from year to year closely in accord with the level of individual valuations (see Chapter 7, sections 7–9).

§ 12. **Personal efficiency as affecting the valuation of agents.** In general it is true that the most skilful cultivator will make a more liberal allowance for his own services in his bid on every grade of farm, for on every farm his skill, tho in varying degrees, will enable him to get a larger net product than his competitors. Despite this higher valuation of his own services, the most skilful cultivator is likely to be the highest bidder for the best agents. The best agents used for a particular purpose tend to get into the hands of the best managers, for the better the agents to which superior skill is applied, the greater are its results as compared with less skill. Thus in many localities this distribution of ability in accordance with fertility is so marked that it is proverbial: "poor lands, poor men." But when a man's ability is of a special kind, either by natural talent or by training, he may be able to succeed well in one industry tho failing in another that calls for no more, but merely different, ability. For example a

good general farmer may be a poor florist or market gardener, a good lumberman may be a poor furniture maker.

§ 13. **Variability of rents.** Rentals of farms, of regular residences and of stores, used from year to year, are comparatively stable. Summer rates for rooms in some college towns where there is a summer school are one-half the regular rates. Rents for unoccupied summer cottages rise quickly if the weather is warm early in the season, for tenants are willing to pay "anything within reason." Livery charges in many places are higher Sundays than on week days; in college towns are higher both Saturdays and Sundays; and on festal occasions such as "Junior proms" and "Senior weeks," antique equipages are drawn from hiding to lure incredible sums from the devotees of society. Decoration Day and Fourth of July, if it is pleasant weather, boat hire is likely to be doubled. In these cases the supply at any price can be only slightly increased, for the time, and the demand carries off the whole available stock at abnormally high prices. The rent appears to the regular patrons to be fixed arbitrarily by the seller; but a study of the conditions will show that the rate fixed is approximately the correct market-price for the conditions, one that just carries off the supply and leaves no efficient demand unsatisfied.

PART III

VALUABLE HUMAN SERVICES, AND WAGES

CHAPTER 16

HUMAN BEINGS AND THEIR ECONOMIC SERVICES

§ 1. Man and wealth as economic agents. § 2. Labor as contributing to income. § 3. Psychic income gained in play. § 4. Play- and labor-motives mingled. § 5. Disagreeable labor. § 6. Physical differences among men. § 7. Comparative strength of men and women. § 8. Differences in natural intelligence. § 9. Talent and training as factors of efficiency. § 10. Moral qualities required in industry. § 11. Necessary combination of qualities. § 12. Inequality of talents shown by biologic studies.

§ 1. **Man and wealth as economic agents.** The whole stock of economic agents in a community at any moment may be classified as wealth and men, objective goods and human beings. In our study thus far of value and price, we have limited our illustrations to objective commodities, and to the uses of the objective (non-human) agencies of production. Little has been said about the other great class of economic agents, human beings. Yet everything that has been said as to the fundamental principles of value and price, applies fully to the uses (services) of men. Indeed it is only by an abstract method of treatment of wealth that the services of men have appeared to be left out of consideration. In truth the presence of men is always, and must always be, implied and understood in any study of the value of wealth. This means not merely that man is the evaluater, the chooser of goods (for of course a world without mankind would be a world where value was nonexistent); this means also that man is the doer of acts that themselves have value and the doing of which profoundly affects *the whole economic situation* in which objective goods are valued. Labor is a com-

plementary agent, some portion of which is indispensable to the use of wealth. Within limits man's efforts and goods may be mutually substituted. Each act a man performs, expressing, as it does, a choice, implies some economic valuation in relation to his other acts and to wealth. In applying his own labor to producing goods for his own use, or in selling his goods or his labor to others, his labor is being constantly valued and, only less often, priced.

Man's labor is valued or priced because, like other agents (non-human agents), it is serving for the gratification of desires. In the process of gratifying human desires the man is correlative with the machine. Both have within them the capacity of yielding services or uses, and the services of the man are valued in the same way as the uses of the machine. The labors of the physician, of the blacksmith, or of the day laborer are bought just as is the use of the rented house or of the hired taxicab. This parallelism is somewhat obscured by the ambiguity of the term "labor" which is used to mean not merely the service (labor), but the people (laborers) who render the service. In such phrases, for example, as "labor and capital," or "land and labor," the term "labor" is used of the persons who perform the labor.

§ 2. **Labor as contributing to income.** In the processes of production and of valuation man plays a dual rôle. He is first the economic subject—the being who has desires and makes choices—but also he is an economic agent, an instrumentality in the gratification of desires—his own as well as those of other people. This is quite simple in the case of chattel slavery. To the master, his slave is on the same economic plane with his horse, his machinery, or his land—each is valued simply for the use it yields. The free man, however, is his own master, a person whose desires and choices are the starting point in the study of value; and at the same time he is an agent in the gratification of his own desires, directly and indirectly. Not only do other people by their services contribute toward the gratification of our desires, but we

actually render many services to ourselves in such acts as dressing, shaving, polishing shoes, cooking, making clothes, etc., which form a very considerable part of most persons' incomes.

Human efforts have the same relation to desires that the uses of material goods have. Labor contributes to income either directly (psychic) or indirectly in the changes it causes in material goods. To be an economic good human effort must meet either a desire in the laborer himself, or a demand from some other person. Many services afford an income directly which is immediately enjoyed. A tropical potentate has an attendant to fan him, another to carry an umbrella, and a third to beat a tom-tom; a humble American citizen is shaved, doctored, sung to and played for, or is his own barber, doctor, and entertainer. The income in such cases is directly enjoyed in personal comfort, in the consciousness of heightened beauty, in the feeling of self-esteem. Something of value is thus created but takes no material form apart from the consumer (who may be the laborer himself).

But the results of most labor may be seen to rest, at least temporarily, in some material form. Effort is put upon a material thing to be used later. The work of the waiter in spreading and arranging the table is not an immediate service, for it is embodied in material form an hour or two before the meal. The service of cook, no less than that of gardener and butcher, is put into material form before it comes to the consumer. The woodman fells, cuts up, and splits a tree, and piles it at the door, putting his labor into a good to be consumed months afterward. But whether labor is embodied or is not embodied in material form, its economic significance lies in the fact that, like wealth, it provides valuable uses (services) to men; that is, it contributes to income.[1]

[1] Formerly the productiveness of labor was said to depend upon this condition of embodiment in abiding material form. According to the view in question, the bartender mixing drinks which would be quaffed a moment later was to be called a productive laborer be-

§ 3. **Psychic income gained in play.** When we consider the fact that this income may be directly in psychic form, it becomes difficult to justify on economic grounds the contrast usually supposed to exist between labor and play. Play—that seems to our modern commercial minds the very negation of economics. Work, work, to fill the granaries fuller, to build larger houses, to produce more material goods, to increase the bank accounts! But is not such a view mere miserliness in disguise? The aim of all human effort, whether work or play, is psychic income. The life of man is a constant adjustment of his own desires and capacities to the outer world, partly by changing objects in creating wealth, partly by changing himself through the use of wealth and of his own faculties. Normal and healthy human beings find a keen pleasure in the putting forth of those powers that develop and preserve strength, activity, and health. This is the purpose of most of the sports, games, and pastimes found in every land and time. In the mere putting forth of the powers of mind and muscle there is a joy felt by children and men of all races, and this is heightened by companionship, emulation, and even by a spice of danger. We may call *labor* any human effort having as its motive something outside of the gratification in the

cause his services were embodied in material form; whereas the lecturer, the singer, the teacher, and the judge were regarded as unproductive laborers because the results of their labors were not embodied in material form, but went at once into psychic income. Whether or not the service has for a moment embodied itself in material form is not of the most essential economic import. The presence of the waiter is as essential to the well-served dinner as are the polished silver and china, or as the well-cooked food. The distinction in question is not now made by most economists. But a similar distinction is inconsistently preserved by many writers who call unproductive the goods yielding direct enjoyment (houses, carriages, etc.) and call only those material agents productive (as tools, machines, etc.) whose product is embodied for a time in material form. If a distinction is to be made between productive and unproductive labor it will have to be found in the occasional contradiction between value and utility; that is, in the result of labor as regards social welfare. (See ch. 39.)

action itself. Actions which have no objective aim, no purpose (except of course making the points of the game, e.g., crossing the goal) outside the pleasure of the mere doing, are *play*. Play is not dependent on a useful objective result later to be enjoyed, but, like beauty, is its own excuse for being. The distinction, therefore, between work and play is one as to the superficial form of expressing human energy, rather than as to the fundamental economic result as it has usually been considered. The nerve-tired student goes out-of-doors to bat the tennis ball, making no change in the material world, except to wear out his shoes and to lose the ball, but finding that hour rich in the joy of life. When the patient fisherman sitting in his boat, was asked, "What luck?" he answered cheerily, as he threw out another line, "Just the luck of a good time."

If properly chosen, play strengthens and vivifies both soul and body, leaving an afterglow of health and happiness. Such play is directly resultant in psychic income, necessarily involves a personal valuation, and if taken with due regard to present duties and to future needs (aye, there 's the rub!) is worthy of a place in the scale of the socially productive. The choice of sports and temperance in their pursuit are among the surest tests of wisdom in men and in societies. Not to know how to play, and how to live joyously in the hours free from business cares, is just as surely a cause of real poverty as not to know how to work. For real poverty is lack of psychic income. Some persons can work effectively, others can play effectively (which does not always mean great expertness). A rich life, truly successful, is possible only to those who can combine the abilities both to work and to play. A love of vigorous play no less than the power of sustained work, marks the dominant and progressive peoples of the earth.

§ 4. **Play- and labor-motives mingled.** Actions of a second kind are those pleasurable in themselves and at the same time leaving an objective result. The hunter enjoys the day better if he returns with well-filled bags of game. In extreme cases

the distinction between the sportsman and the "pot-hunter" is not hard to find. It is a matter of emphasis; the one has his chief joy in the sport, the other in the material results of the sport. But always the motives are somewhat mingled. The study of primitive peoples shows that all of the more important industrial activities were first of the nature of play. The primitive man did only the things he liked to do, unless driven by the direst want. The whole tribe danced and sang, went through intricate dramatic ceremonials before going upon a hunt or planting corn, made a tournament of the hunt itself, and even of hoeing and reaping the crops, and concluded with festivals in celebration of the successful hunt and of the bountiful harvest, to the delight of every member of the tribe. Thus were men gradually habituated to actions having an object outside and beyond themselves.

§ 5. **Disagreeable labor.** Actions of a third kind are those disagreeable in themselves, but performed by force of will, because leading to some desired result. A large part of what is called labor to-day is of this kind, either like taking medicine—positively disagreeable but endured for the hope of ulterior benefits—or in the milder cases only relatively undesirable, being not what one would most prefer to do at the time. The end sought is an objective good resulting from the labor.

The social ideal clearly is that all labor should be made desirable. Social dreamers love to picture a day when all shall find for effort a full reward in the mere doing—the reward of the artist, of the scholar, of the saint—in addition to the objective result in economic wealth. In some occupations possibly we are slowly nearing this ideal. Not only in the professions and in the esthetic arts, but in commerce, in mechanics, and in the humblest walks of life are found men free from envy, rejoicing in their daily tasks. Such is the normal feeling of the healthy optimist. And yet in every serious occupation there are numberless moments and occasions when the spirit flags and only hard necessity holds men

to their tasks. The complicated and often long-continued tasks of modern industry can not be accomplished by mere play; neither can they by labor done only with immediate pleasure. The dilettante does not go far or long or steadily; the real tasks of the world are done by men that labor, now with joy, now wearily, but unfailingly. A large part of the heavy monotonous hand-labor is an evil just because it yields so little of the joy of workmanship and is so purely drudgery endured for the day's wage at the end.

§ 6. **Physical differences among men.** As material things differ in their uses and fitness to yield economic uses, so do men differ in their powers of labor. The most obvious difference is in physical strength, which varies with age, individual, race, and sex. Differences due to age are the most obvious. The child, at first weak, grows toward his maximum of physical strength, which he attains before his fullest intellectual capacity.[2] The period of maximum physical working power lasts fifteen to twenty-five years according to the individual and to the kind of work, and then gradually declines as the old worker approaches again the inefficiency of the child. Families and strains of stock differ notably in physical powers; one excels in stature, another in development of muscle. The differences within families are inexplicable; sometimes one brother excelling in one thing, the other in another. The physically perfect man is a rare product. Among three thousand students are but twoscore endowed with the remarkable combination of lungs, heart, muscle, nerve, and character, that makes possible the finest athletes. The natural dexterity of some workers marvelously surpasses that of the

[2] In 1910 there were nearly 2,000,000 children of the age-group between ten and fifteen years reported as engaged in gainful occupations in the United States, most of them in agriculture. Two-thirds of the total number were boys, those occupied being one-fourth of all boys of that age-group. In the South, however (comprising the three southern geographical divisions in the census), nearly half the boys of that age-group were in gainful occupations, while in the North only one-eighth were.

average man, and seemingly is due not to special training, but to natural qualities of sight, touch, nervous reaction, or muscular energy. The national and racial differences in working power, even in the simplest tasks, are marked, but are difficult to explain, as so many influences, customs, habits of life, and varieties of diet modify the result. We can not tell how much of the Englishman's great superiority over the East Indiaman is due to individual native differences of mind and body, how much to the social environments in which they have lived. Certainly tho, the difference is not mainly one in size; in the Boxer War the little brown men of Japan outmarched all the others. Certainly fiber counts for more than bulk, and character for more than muscle.

§ 7. **Comparative strength of men and women.** A difference in the physical strength of the sexes is found in some degree throughout the world, but it would appear to be far more marked in civilized than in savage communities. The records made at the field-games in the women's colleges are improving; but still fall far short of the men's records in any leading college: in the hundred-yard dash, thirteen seconds as against nine and a fraction; in the high jump, fifty-two inches as against six feet and over. The muscular force of American college women as tested in various gymnasiums (average of all students in college) is little more than one third that of men. The average strength of back for women is 35 per cent that of men, the average strength of legs, 41 per cent, and the average strength of right forearm, 38 per cent. This is an abnormal difference. The natural and possible strength is more nearly attained by men than by women under our social conditions. Women escape the physical toil which strengthens, but not the mental strain which kills. Men carry more of the wood, but the women not less of the worries. A fairer test is applied among peasants in field-work in France and Germany, where the strength of women is found to be about two thirds that of men. American women should do and will do more to attain their natural strength as we

attain sounder ideas of education and saner modes of living.

§ 8. **Differences in natural intelligence.** Mental qualities are not easily distinguishable from physical qualities, if in the physical are included keenness of eye, quickness of nerve, and even superior judgment of materials, tools, methods, etc. Moreover, mental ability is a very complex idea. It may refer to one of the many different qualities of mind, to quickness of observation, talent for color, form, harmony, to memory or imagination, to readiness in speech, to systematic habits of thought, to power of intense and prolonged mental application, to mathematical power in various directions, to philosophical capacity, that is, a capacity to discover the more far-reaching causes of things. These qualities unite in unending combinations to produce that kaleidoscopic variety of personality which makes the world so interesting. Some men the world calls geniuses have lacked some of these qualities almost entirely. Others who in most respects are either feeble-minded or insane (called idiot savants) have shown an uncanny talent in music, or in mathematics, the very subject which is the stumbling block for many otherwise bright minds.

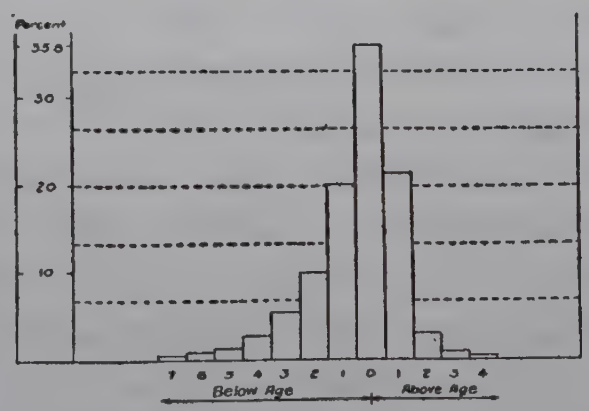


FIG. 28. BINET TEST IN AN ELEMENTARY SCHOOL.

By this set of psychological tests the children testing "at age" or but one year above or below (accounted normal), were 77.3 per cent. of the total (of whom 35.8 per cent tested at age). Those testing two to four years above age (supernormal) were 4.2 per cent of the total. Those testing two to seven years below age (subnormal) were 18.5 per cent of the total. Some children testing subnormal are simply slow of development and, as they mature, become normal and sometimes supernormal. But on the other hand, many of the younger children testing almost normal will develop very little mentally, and at fifteen will be several years below age. This in part explains the failure of so many children to attain grades above the fourth, as shown in Figure 29, below.

Each of these natural mental traits has its peculiar part in fitting the man for some kind of work, and the absence or weakness of any one of them increases the difficulty of qualifying as an efficient worker in some occupations. Native intelligence shortens the time needed for preparation in any calling, hastens new methods, decreases the cost of supervision, saves materials, tools, and time, diminishes loss from breakage, makes possible the use of finer machinery and better appliances, and imparts those subtler qualities that distinguish the best from the mediocre products. It is impossible to measure these factors of native ability exactly, tho the psychological tests recently devised are giving remarkable results. But in every school children in all their activities show marked differences in traits, which, we all believe, are inherited in certain families. Mental capacity of the higher order develops more slowly and longer than do the physical powers and the senses. Judgment and wisdom are the fruits only of a life rich in experience.

§ 9. **Talent and training as factors of efficiency.** It is impossible to measure exactly the parts that natural talent and acquired ability play in determining any person's efficiency. Two men sitting side by side in an examination, get the same grade; one of them has had excellent preparation from childhood, and all the opportunities that money, travel, and cultured associates can give; the other, under great difficulties, has prepared in a country district school with a little coaching now and then, and struggling against great odds, has at last entered college. The same grade does not mean either that in their natural ability or in their training in this particular subject, they are equal. Yet the grade is the best expression to be had of their efficiency in the particular work.

One person with great natural musical ability may have lacked alike good opportunities of study and the health and industry to gain skill by long practice; while another with less natural ability but more favored in health and in education

will attain to a much greater success both artistically and economically as composer, performer, or director of music.

Similarly the net economic quality of an artizan, an engineer, a lawyer, a business man, a worker of any kind, is a resultant of education and native talent, which along a broad zone are interchangeable, each in some degree indispensable, each supplementing the other. Any ability may be helped by education in the broad and true sense, tho a fool cannot be made wise by training, and tho many a potential genius doubtless has been dwarfed in dusty schoolrooms by stupid teachers. Education increases adaptability and enables a trained mind to outstrip an untrained mind of greater natural power. Education makes direction easier, fits for higher tasks, and decreases the difficulty of coöperation.

By education in this connection should be understood not merely knowledge gained in schoolrooms and by the aid of books and teachers, but every sort of experience and activity of mind and body which helps the natural capacities of the man to grow and strengthen. The subjective conditions, the eager mind and the strong character, most often bred of necessity and deprivation, are more valuable equipments for life's work than is unheeded or half-comprehended schoolroom instruction. Hence the business man's usual skepticism of the practical benefits of "higher education" in the more limited sense as applied to pampered youth with indolent minds.

§ 10. **The moral qualities required in industry.** The moral qualities of the worker are increasingly important as society grows more complex. But the need of a particular moral quality is relative to the special task in hand. Honesty is needed in the bank teller, but he need not spoil a good story. The champion bronco-buster of Arizona is not a Sunday-school superintendent. So, discipline, obedience, self-control, regularity, and punctuality are needed, for more and more in these days business is run by the watch. Confidence, patience, good temper, in fact all the virtues in the calendar are necessary at some time and place, and most of them are

needed all the time in business. Places may be found in our developed society for those who are deficient in some of these qualities (it is fortunate that it is so), but these are the poorer places. Many men fail to recognize all the qualities necessary for success, and few are able to understand the cause of their own failures. Blind to their own faults, many are, for lack perhaps of one trait which to themselves seems insignificant, dropped down one notch after another in the scale of industry, and equally blind to the true cause of success in their rivals, they rail against the unjust fates.

§ 11. **Necessary combination of qualities.** Skill and capacity in industrial tasks is a resultant of many qualities. The simplest task calls for a combination of physical force and of judgment—even the digging of a ditch or the fitting of a stovepipe. For most industrial tasks rarer combinations of qualities are required. The retail salesman must be neat, punctual, polite, and long suffering. A confidential clerk must have discretion, judgment, and other moral qualities in an unusual combination. The substitution of qualities is possible within limits; a rare quality may make amends for the lack of a commoner one, and a man may, because of peculiar fitness in some regards, continue to hold a position for which in other ways he is little fitted. The rarest and most valued worker is one uniting many good qualities and fitted to deal with emergencies. The economic efficiency of the worker often is no stronger than its weakest link. A most frequent use for training is found in the fact that strengthening some one weak quality may raise the total efficiency in a remarkable degree.

§ 12. **Inequality of talents shown by biologic studies.** The political philosophy of the eighteenth century was based on the idea of natural rights and natural equality. Even so shrewd an observer as Adam Smith, misled by the prevailing view, discussed wages on the assumption that all men had equal natural ability. It is still a favorite assumption of radical social reformers that the natural ability of all men is

equal, and that all the differences in success result from political injustice. The study of biology of late has made patent the unending differences that prevail throughout the animate world. No two members of the same family or species are just alike; no two pigeons have wings of just the same length. Nature by numberless devices is experimenting constantly with variations on either side of the established mean. The accepted fact of biologic evolution rests on the foundation of inequality, in structure and powers, selected, adapted and transmitted by heredity. In all life there is inequality, and the whole drama of human history as well as that of biologic evolution must be meaningless or illusory to one who does not see this truth. Accustomed now to this point of view, we as inevitably think of the natural inequalities in men as did Adam Smith of their equality. Inequality of talents is a continuing fact. Men in all their qualities of mind and body display this kaleidoscopic variety.

This does not mean that industrial inequality as it exists to-day, the great disparity of incomes, correctly or justly reflects the degree of difference in men's qualities, either native or acquired. It does not follow that a thousand-dollar income represents ten times the ability of a hundred-dollar one—far from it. But to those who ignore the inequality of men, the whole problem of industrial remuneration must remain a mystery. The differences in human capacity, in respect to the rendering of services of value, is one of the fundamental factors entering into the determination of labor-incomes.

CHAPTER 17

CONDITIONS FOR EFFICIENT LABOR

§ 1. Subjective and objective factors of efficiency. § 2. Food and efficiency. § 3. Clothing and housing. § 4. Schooling. § 5. Political security and honest government. § 6. Effect of caste upon efficiency. § 7. American democracy and efficiency. § 8. Balance of advantage between work and leisure. § 9. Division of labor and exchange. § 10. Individual and territorial division. § 11. Advantages of specialization. § 12. Best adjustment of talents and occupations.

§ 1. **Subjective and objective factors of efficiency.** The efficiency of labor, in its broadest sense, is its ability to render services or produce things that minister to welfare. It is a resultant of many influences. In its broader sense, the phrase "efficiency of labor" implies any and every influence that makes for a larger and better supply of goods. In part it depends on the physical and mental powers of men, in part on things outside of the worker that either stimulate and strengthen him, or give him more favorable conditions in which to work. These are respectively the subjective and the objective aspects of efficiency. Many of the objective conditions count in the result only as they affect the men, benefiting their health and strength, stimulating their ambitions, promoting education, invention, thrift, etc. It is this class of forces, acting in and through men, of which we are now to speak. We leave aside for the time one of the largest objective aspects of the question, that of the material equipment with which the community as a whole is furnished, relative to the population. According as this equipment is more or less abundant, as labor is employed in a fertile or a barren

field, with a sharp tool or a dull one, with a highly developed machine or a poor one, the product is more or less.[1]

We limit our attention here to the conditions of efficiency midway between the qualities and abilities of men (primarily subjective) and the natural equipment (primarily objective). Among a population of a given grade of intelligence and a given economic environment of natural resources, what causes will operate to make the laborers vary in their efficiency?

§ 2. **Food and efficiency.** Usually workmen that are getting good wages enjoy abundant food and creature comforts; poorly paid workers go scantily fed. The question arises: which is cause, which effect? Some maintain that all that is needed to make workmen more efficient is to feed them well. In some cases this is probably true. The Porto Ricans enlisted in the American regular army are reported to have increased at once in strength, weight, and vigor; the Filipino recruits, thanks to the American army rations, soon outgrew their uniforms. Some employers in Europe pay their workmen an extra sum on condition that it is spent for meat. But if wages increase, it is by no means certain that more or better food will be bought; or, if it is, that the workmen's powers will be increased. There is a limit to the gain in efficiency by increasing food. There is some reason to believe that in America great numbers of our people, perhaps even many manual laborers, would be better off if they bought simpler and less costly food. The maximum of health and vigor may be attained with moderate outlay, and beyond that point richer food doubtless does more harm than good. Poor judgment in the selection of food is shown in many families, and there is little appreciation of its influence on health.

At one time an experiment in feeding pigs was tried on the Cornell farm. Four groups of six pigs each were kept in four

[1] Some part of this subject has been already touched in discussing wealth and its uses, and the other parts will be more fully treated in Part VI with population, diminishing returns, and machinery.

different pens and fed four different rations. Tho alike in breed and age, the groups began at once to differ in disposition. One group squealed more; another scratched more; another waxed fat faster. Every week they were weighed, and finally were butchered, hung up, and photographed. At that same time, at the Elmira Reformatory some experiments were being tried on some criminals of the lower class. They were given daily baths, special physical exercises, and were fed on a specially bountiful diet. Scientific philanthropy stopped there, but photographs "before and after," reproduced in the printed reports, show the great physical improvement that resulted, and a marked change occurred likewise in disposition and intelligence. Many laboratory experiments have been made of late to test the chemical nature and the physiological effects of foods. It is becoming more fully recognized that the quality and quantity of food, and the cooking of it, have a great influence on the economic quality of the worker.

§ 3. **Clothing and housing.** Variation in quality and amount of clothing, while of course varying with the climate, is on the whole of less practical effect upon efficiency than that of food. Loss of heat and energy, dulling the powers, stiffening the muscles, causing illness with many trains of evils, make ill-clad workmen inefficient. The cost of clothing enough for comfort is, however, comparatively small, the amount spent for ornament is comparatively high. A man spends about one third of each day in sleep and his physical and mental powers and efficiency in his hours of work depend in large measure on the conditions making for restful sleep, on the comfort, decency, light, ventilation, and sanitary surroundings in the home. Nearly another third of each worker's life (about half his waking hours) is spent in his house or in its neighborhood, where the sights, sounds, and physical conditions of streets, alleys, and places of amusement are constantly helping to determine his fitness for industrial tasks. Even more important are these conditions of the house and

surroundings, good air, water, playgrounds for growing children, to enable a population to continue and renew itself with healthy and efficient workers. Many of these conditions are free goods in the country, and the simplest cottage in an open field makes them possible. They become more difficult to secure as manufacturing and densely populated commercial districts grow. People come to live in unnatural conditions, and evils of slums and bad housing appear.

Another third of the worker's life is spent in his work-place, whether it be in the dwelling or in the field, street, store, or factory. Astonishingly little thought has been given, even by men working for themselves, to the effect that the work-place may have on the worker's efficiency. Many employers, however, have come to see that it does not pay to have bad factory conditions. Even if the ultimate effects in causing sickness and shortening the worker's life be ignored, the bad immediate effect to the employer is a reduction in the efficiency of the worker. A slight change in the weather affects the working of even a gasoline engine. Is not a worker as sensitive to condition of physical comfort and health? Any piece of machinery requires to be installed, maintained, and adjusted just right or it will fall short of its full capacity and wear out more quickly. It is so with a man. The best factories are now being planned as carefully as is the machinery, with a view to having excellent conditions of light, heat, ventilation, cleanliness, and comfort of the employees. Doubtless much larger and fuller provision of this kind would be to the advantage of employers, as well as for the welfare of the workers and of society in general.

§ 4. **Schooling.** Education in schools is a most imperfect index of training for industrial tasks. A large part of the purpose even of the elementary schooling is to fit for citizenship and for the receipt of the large psychic income possible through reading and the understanding of life about one. But one without reading, writing, and other elementary school subjects is in these days unfitted to take part in all but the

simplest tasks. The percentage of illiteracy in the United States, tho still considerable, is steadily declining.

Population in the United States, 10 years of age and over.

	Percentage of Illiterates			Average years of schooling
	Total population	Whites	Negroes	
1880	17	9	70	4
1890	13	8	57	4.5
1900	11	6	45	5.2
1910	8	5	30	5.9

The decline in illiteracy accompanies a regular increase in the average period spent by the youth in school, which has risen from 3.4 years in 1870, and 4 years in 1880, to 5.9 years in 1910. Still a very large number of children drop out of school very early as is indicated by these figures.

Proportion of age groups attending school

Ages	Per cent attending
10–14 years	96
15–17 years	56
18–20 years	17
21	5

Many of those that remain get no farther than the fourth grade. An average result, as follows, is indicated by the statistics: of the children entering the first grade,

About 90 per cent attained the fourth grade.
About 66 per cent attained the sixth grade.
About 50 per cent attained the eighth grade.
About 25 per cent entered High School.
About 10 per cent graduated from High School.
About 5 per cent entered a college, normal, technical or professional school.

§ 5. **Political security and honest government.** If men are to labor in the present and for the future, they must enjoy the protection of a stable and strong government. As the framers of the Constitution expressed it, the function of government is to insure domestic tranquillity, provide for the common defense, and insure the blessings of liberty to the citizen. Directness and certainty of reward are more essential than mere size of reward in insuring action and effort. There

must be a close relation between work and the fruits of work. Political insecurity weakens this relation and makes the reward dependent on the chance of escaping the highwayman and the foreign invader. For fear of this, many a nation has sacrificed some of the precious elements of liberty, and has submitted to a strong despot. This was the economic motive in the feudal system.

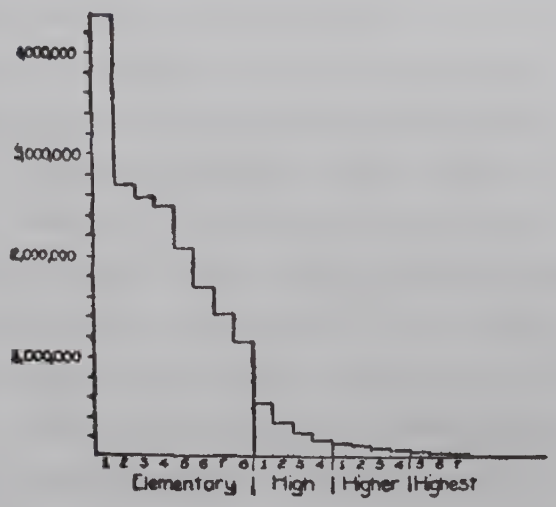


FIG. 29. PUPILS IN SCHOOL, BY GRADES, 1912.*

The prevalence of standards of honesty in private and public business is a condition for high industrial efficiency. Corruption in government has the same effect as political insecurity; in fact, it is but another form of it. We are accustomed to the thought that in an Asiatic despotism a worker beginning a task is uncertain whether he will reap the reward, as public officials may at any moment seize upon the fruits of his labor. But in our own country similar evils are not entirely lacking. Assessments often are unfair, and justice sometimes is bought. Men in high executive positions are able to make or mar the fortunes of their followers. Sometimes a legislator from a country town goes to the state capital poor and returns rich. The spoils system in politics is costly to the community, not merely because a few men successful in gaining office get paid several times as much as they are worth; it is an economic evil because it tempts many other men to give up steady work. Such examples break down the

* The diagram represents 4,367,000 children in the first grade. A very large number (more than two out of three) stay there more than a year, repeating the work. A few never get beyond this point, but all excepting about a tenth attain the fourth grade, tho some take seven or eight years to do it. Then each year several hundred thousands drop out. More than one-half of those in the eighth grade do not enter a high school (or its equivalent).

motives leading to careful preparation for regular industry. They breed the notion that wealth is more dependent on chance or jobbery than on efficient service. Dishonesty in private business means the use of energy not to produce wealth, not to add to the sum for all to enjoy, but to get it from some one else. Public corruption and commercial dishonesty alike entail upon the industrious both immediate loss and the far greater cost of weakened character, relaxed energy, and decreased efficiency of labor.

§ 6. **Effect of caste upon efficiency.** It may be said generally that customs and social ideals that raise or depress hope and ambition, affect efficiency. The institution called caste, which fixes the place of the worker and makes it impossible to rise out of the social position in which he is born, and disgraceful to do any work reserved to other castes, is depressing to energy. It exists in some form throughout the world, and where it is not called by that name, the same caste spirit is at work. The European peasants in the Middle Ages lived under the shadow of it. Where slavery exists the master class at times feels its hardships. "It is not so hard to live," says the hungry Creole daughter in "The Grandissimes," "but it is hard to be ladies. . . . We are compelled not to make a living. Look at me: I can cook, but I must not cook; I am skilful with the needle, but I must not take in sewing; I could keep accounts; I could nurse the sick; but I must not." Nowhere in the world is there less caste than in America, but it is here. The negro's low measure of industrial efficiency is partly the cause of so-called race feeling against him, but in the case of the more capable individuals it may be partly the effect of that feeling. To close to a capable worker all but the menial occupations is to weaken his motives for effort.

§ 7. **American democracy and efficiency.** Democracy has made for the efficiency of American industry much as have the great natural resources. America's rapid advance in industrial lines has been favored by her ideas and institutions.

The many rewards open to personal merit and the chance for every worker to improve his position, have helped to stimulate here to greater energy and to a faster working pace in most grades of labor than is found elsewhere in the world. There is danger that under the new conditions of population and industry something of the spirit of enterprise will be lost. To Western eyes already the young men in the older East seem to be trammeled by social conventions. In an older community there is less of hopeful ambition; one's position depends more on what his fathers achieved; in the new community, more on what he does himself. If it is true, as wise students declare, that the frontier has been the nursery of our democratic ideas, we may well ask what effect the closing of the frontier will have on our national sentiment and on our material prosperity.

§ 8. **Balance of advantage between work and leisure.** Custom and national temperament affect the efficiency of labor by determining the normal period of labor-time. After the bare necessities of life are provided for, the worker has a wide or narrow margin of productive energy to use as he pleases. If four hours' work a day would enable him to live, will he work longer or will he stop? The answer is determined by the balance between the value of leisure and the value of labor's product. Is the lure of the fruits of additional hours of labor stronger than the desire for idleness? Does the pain of toil repel more than its fruits attract? Individual differences are plainly expressed when each man labors on his own field. The prudent man, in the old maxims, makes hay while the sun shines and plows deep while sluggards sleep. National and religious holidays in some countries make an enormous loss of time from industry a patriotic and pious duty. The use made of spare time differs according to climate, race, and temperament. In the tropics the margin is converted usually into loafing, in the temperate zones largely into objective forms of enjoyment. In the modern large organization of industry, working hours are much the same for

all workers in the establishment. Individual preferences are still expressed, however, in irregularity of employment. In the South some manufacturers have found that on an average the negroes will work in a factory not more than five or six hours a day, perhaps working ten hours for four days and staying away two days a week. Such limited working hours mark a primitive standard of desires and primitive industrial qualities, altho a shortening of the long working day of ten or twelve hours, as incomes increase above bare subsistence, is in accord with a rational valuation of leisure. A moderate change in that direction can not but increase rather than diminish the efficiency of labor.

§ 9. **Division of labor and exchange.** The term "division of labor" is simple, but the thought is a complex one. Its full discussion would cover the whole field of political economy, but only its most essential aspects can here be touched upon. *Division of labor* is a term expressing that complex arrangement of industrial society whereby individual workers are enabled to apply themselves to the production of certain kinds of goods, securing others by trade. Division of labor and exchange are counterparts and mutually determine each other. On Robinson Crusoe's island there could be no division of labor. Division of labor depends on the extent of the market, and in turn widens its limits. The number of articles that any one would care to produce at one time and place depends on the opportunity to exchange them. Those two aspects of industry thus are inseparable in thought and practice. The worker finds division of labor existing as a social institution and, according as he adapts himself to it wisely or foolishly, it increases more or less his efficiency. Division of labor necessitates variety of regular occupations, and the practice of special trades and professions. *Specialization* is the individual aspect of division of labor. It is doing one comparatively limited kind of task with the purpose of becoming more expert in it. The term division of labor, however, suggests more broadly the situation where two or

more persons are specializing and are trading directly or indirectly with each other.

§ 10. **Individual and territorial division.** Division of labor may be between individuals in the same community or between those in different territories and nations. In division of labor between occupations, each worker applies himself to the production of some product or group of products and secures other goods by trade. When a number of workers in a locality engage in the fabrication of one kind of product to trade with persons in another community, it is territorial division of labor. This trade may be between persons living in different localities in the same country (called localization of industry) or between the citizens of two nations, in foreign trade. Division of labor usually begins in some natural differences, of soil, climate, mineral and forest resources, or water-power (see Chapter 6, section 11, on origin of markets). Whatever its origin it leads to individual specialization which becomes fixed by habit and training. To the original natural advantage are thus added the advantages of a larger and regular labor-supply, of nearness to related and tributary industries, and of the greater chance to use waste products, and frequently the economics of large-scale production (see below, Chapter 31). The natural advantages in another district must be large to enable it to start successfully against these acquired economies, and territorial division of labor thus tends to continue for long periods when once established.

§ 11. **Advantages of specialization.** There is a tradition that an ingenious lecturer in one of our universities was accustomed to give to his class eighty reasons why division of labor was of advantage. It is none too many, as every reason for the modern, as contrasted with the primitive, organization of industry should be included. Apart from natural differences in localities, most of these relate to specialization. Specialization increases efficiency by: (a) saving time; (b) saving tools and materials; (c) improving quality; (d) increasing skill; (e) increasing knowledge; (f) stimulating in-

vention; (g) encouraging enterprise; (h) economizing talent. The headings just given may serve to suggest the leading phases of this subject.

(a) Specialization saves time by making unnecessary the physical change of place for the worker, the frequent shifting of tools, and the mental readjustment required for the undertaking of a new task.

(b) Specialization saves tools, for either each kind of work must be most ineffectively done, or there must be provided for each worker a complete set of tools which thus will be used rarely and will rust out rather than wear out. If a few tools are thoroly used, they yield a larger income and require less care and repairs in proportion to their uses. In fact, this fuller economic use of machinery and plant where a large product is turned out at one place, is a prime factor in the advantages of large production (a subject to be treated elsewhere, Chapter 31, much more fully than is here possible).

(c) By specialization is made possible a quality of goods never to be secured by the less skilled efforts of the Jack-of-all-trades.

(d) Specialization develops *skill,* as repetition of the same task trains the muscles, forms a mental habit, and gives swiftness and deftness of touch.

(e) The specialist is able to give much longer time to education and training for his lifework, and he continues to grow in knowledge of his materials and of the best processes, and he gains a power of delicate observation and facility in meeting new difficulties that are impossible when attention is divided among a number of tasks.

(f) By dividing and simplifying processes, specialization stimulates invention. The most complex machines have been developed gradually by combinations and adaptations of simple tools, and the more a process is subdivided, the greater is the chance of hitting upon a device to repeat mechanically the few simple movements.

(g) Specialization increases the motives of emulation and

enterprise, by making it possible for each man to see better what is needed and to make a more exact comparison of results.

(h) It economizes talent by giving to each the highest task of which he is capable, while fitting the less efficient workers into the minor places made possible by subdivision. In an American wagon-factory, a one-armed man operating a machine was able to turn out as large a product and earn as high wages as any other employee. The same advantages of specialization are found with modifying conditions in educational and professional lines. The marvelous progress of science in recent years has been made possible by each student and investigator doing a few things and doing them well.

§ 12. **Best adjustment of talents and occupations.** Most young people give slight reflection to the choice of an occupation. The world is filled with industrial misfits, "round men in square holes," good carpenters spoiled to make poor doctors. The individual worker, to attain his highest economic efficiency, must select from the occupations made possible by division of labor the one for which his talents are best fitted. It so often happens that the natural aptitude of the youth is the thing last or, in any event, least considered. Unreasoning imitation, family traditions, parental wishes, class pride, social prejudice, childish whim, are often decisive of the life career. Some occupations have so few chances of advancement that they are called the "blind alley trades," yet to start in them is so easy that they attract the unthinking youth, especially those with impoverished parents. Happily in some cases, before too late, the man "finds himself," but too often the poverty of the family and the obstacles to education preclude the exercise of intelligent choice.

Since the beginning of the century some serious efforts have been made to meet this difficulty by what is called *vocational guidance.* In some of the German schools in recent years the children's aptitudes have been carefully studied, and definite advice has been given. Bureaus of vocational guid-

ance are maintained now in some American cities. With more careful studies of the strength, health, qualities of sight, hearing, touch, natural aptitudes and tastes, one of the greatest of social and economic services will be in this way performed.

It is of importance to society as well as to the individual that talent should be discovered in time, that tasks should be fitted to aptitudes, that each member of society should attain to his highest efficiency. The approach to this ideal—made possible by popular education, the decline of caste, the spread of genuine democracy, the progress of social justice—will increase not only the workers' efficiency, but society's abiding welfare.

CHAPTER 18

THE VALUE OF LABOR AND THE CHOICE OF OCCUPATIONS

§ 1. Services of labor comparable with uses of wealth. § 2. Limitations of the labor-supply. § 3. The direction of labor guided by the value of its results. § 4. Value of labor to the isolated laborer. § 5. Rewards and sacrifices incident to occupations. § 6. Psychic factors in labor-incomes. § 7. Costs and deductions from nominal labor-incomes. § 8. The long-time and ultimate rewards of labor. § 9. Rarity of ability limiting choice of occupations. § 10. Imputation of value to labor and to uses of wealth.

§ 1. **Services of labor comparable with uses of wealth.** In the last two chapters we have sought to suggest in some measure the variety of human talents and the various conditions under which human labor is exerted for economic purposes. The aim of this and the succeeding chapter is to make clear the manner in which the various kinds of labor are evaluated (the value-problem), and how they are sold in the market (the price-problem of wages). Fortunately, we have already, in the theories of usance and of rent, all that is essential and fundamental to theories of labor-value and of wages. Man's services and wealth's uses move in parallel lines and are of parallel nature in contributing to the securing of income. Human actions directed toward some desired end constitute a *usance* of human beings; they are valuable services just as the work of domestic animals, the uses of tools, and the motions of machinery are valuable uses of wealth. These valuable services, partly rendered directly to persons and partly embodied in goods, constitute *labor-incomes,* comparable to the usance of wealth, the wealth-incomes. (See also Chapter 19, section 12.) The free laborer sells his

services (separable uses) just as the owner of a more or less durative agent sells its usance, *without selling the use-bearer*. Our task, therefore, now is not to formulate a theory essentially different from the general theory of value and of price, but merely to show how labor exemplifies the general principles of value and of price, and particularly those of usance and rent, already set forth; noting any circumstances surrounding the process that are somewhat peculiar to the case of labor.

We know that value is the expression of a certain choice among goods, and price expresses a ratio of exchange that is arrived at among a number of buyers and sellers whose choices embody demand and supply. Let us look first at the more subjective aspects of the problem; that is, the value which labor as an agent for gratifying desires has to the human being who possesses the labor-power.

§ 2. **Limitations of the labor-supply.** The fundamental condition of all valuation is limitation of supply relative to the desires; so it is in the case of the valuation of labor. We have no difficulty in recognizing that some qualities of labor are scarce. There are some acts that are more difficult than others and some which few men can perform at all. Most women will confess that they cannot warble as Patti could, most men will admit that they have not the mercantile ability of John Wanamaker. There are not enough great surgeons with magic deftness of hand. There are not enough great medical specialists, men of marvelous insight, who do not guess and blunder, whose diagnosis is swift and sure. The man of mediocre capacity recognizes even through the fog of his self-esteem that there is a reason for the high value of rare services such as these. The proverb, "There 's always room at the top," is both a cheering and a pathetic truth. In every branch of human effort there is a never-ending lack of that higher qualification and training required for the best results.

But it is not so easy to see that the commonest services have value only because, at any particular time and place, they are

scarce. Compared with the possible desires there are many things to be done if there were to be had at a low enough cost (or price) labor sufficient to do them. It is, alas, true that there may be a temporary maladjustment of industry, when either in a particular factory, or in a particular locality, or more generally at a time of industrial depression, there is a superfluity of human labor. This is the acute problem of unemployment. There is at all times a superfluity of human agents of certain kinds. Children are often eager to help, and grieve when they are told that they are "more bother than they are worth." Many of the ignorant, the insane, the feeble-minded, the vicious, drunken, and debauched, numbering unhappily many millions, can give to the world only negative uses, more properly called disservices. This is the chronic problem of the unemployable. But services of normal men are nearly always in demand, and the higher services are so rare that they are in great demand; except for temporary maladjustments in industry in our complex exchanging economy, labor of every kind is scarce, relative to the objects of desire which it might aid in procuring. Man's desires have no bounds, his powers are limited. No community has regularly at its command an absolute surplus of labor services (tho there are temporary maladjustments).[1] Either through lack of ability or lack of skill and endurance and willingness to work, the people in a community altogether are unable to do enough work to satiate all the desires to which labor could minister.[2] Men's strength and endurance fail after a few hours of exertion, and the desire to rest overcomes, at the end of each day's labor, the desire for other goods which continuance of labor could secure. If labor were available in unlimited amounts, it would afford an unlimited supply of

1 However, it may easily happen that the laborers may be so numerous, relative to other resources, that the value of labor is lower than it might otherwise be, or than is consistent with general well-being. See on population, Part VI.

2 See ch. 36, sec. 3 on "the lump of labor" notion.

ultimate services (so far as they are dependent on labor) and the value of these services would sink to zero. Some existing limitation of labor, therefore, is essential to its value.

§ 3. **The direction of labor guided by the value of its results.** The labor available at any time and place can be turned to securing, improving, and multiplying the amount of any one, or of many different kinds of goods, or it may be distributed among them in any chosen proportion. Thus in a very real sense labor is a potential supply of goods. Within the limits set by materials to work upon and by the indirect agents to work with, the direction of the labor of one period determines the kinds and amounts of the goods of the next period—moment, month, or year. A savage tribe finds game plentiful and kills it; then turns to dressing skins to making canoes or gathering and making flint arrow-heads. At a time of famine the whole tribe gives all its energies to the search for food. In civilized lands men desire in turn the services of the baker, the blacksmith, the paper hanger, the piano tuner, and the dentist. Some of the services yield directly psychic income, and some are embodied in material goods which yield a psychic income. These various ultimate services and incomes have different values from period to period. These values serve as a guide in the application of each kind of labor, which is turned now in this direction, now in that, to render the most valuable ultimate service for which it is fitted. Particular kinds of labor-services therefore differ in desirability at any moment, and tho in a general way these differences persist in large measure, yet they vary constantly in some measure with changing circumstances. These facts explain the constant shifting, and attempts at shifting, of laborers from one occupation to another (as discussed more fully below in section 9 and in Chapter 19, section 3 and section 8).

§ 4. **Value of labor to the isolated laborer.** Let us now consider the problem of labor-valuation as it might present itself to an isolated laborer, such as Robinson Crusoe on his

island. He would have at his disposal a limited fund of material resources, tools, weapons, metal, etc., and a limited fund (let us call it) of labor-services, viz., his own. If he had much more wealth (canoes, house, stock of food, etc.) and were able to work many times harder, he would from the outset be able to gratify his desires much more abundantly. As it is, he is under the necessity of choosing the particular way in which his efforts should be expended. A day's labor spent in one direction may give a much more valuable result than if spent in another. Crusoe's first task was to secure the valuable supplies on the wrecked vessel. (See Chapter 2.) Until this was done it would have been folly to begin to build a hut or to till the soil. In this work of salvage the various tasks were performed in a certain order determined by this principle: each hour's labor is to be applied where its result promises to have the most value. Next he turns his efforts toward his garden, or his domestic animals, or toward building a house or a canoe. At a certain season of the year a day's labor would be worth far more in the garden than at carpentry.

We perceive thus that, even in the case of the isolated laborer, his labor has no predetermined value which can be transferred to, or put into, its material products; rather the various products have an anticipated, expected value, which serves as a guide in apportioning the labor. Labor has value attributed to it according to the value of its products, now higher and again lower than usual. An hour's labor even of the same man does not of necessity have the same value in different tasks at the same moment, or in the same task at different times and under different conditions. Much less should we expect the labor of different men to be of equal value when numbers of men meet and trade in a market.

Moreover, labor is applied according to *expectation-valuations* (a present valuation of the future desirability), and these expectations may be mistaken, being either too large or too small. Some undertakings turn out well, some ill. The

weather may be more or less favorable, the insect pest be especially troublesome, while many other turns of good luck or bad luck may give results far out of line with the expectation-valuations which guided the application of labor. Therefore, the products have value not because a certain quantity of labor has been put into them, but rather a certain kind and duration of labor has been put into them because of the expectation that the products will have a certain value.

The play-element and the pleasure-in-work-element likewise enter into the valuation of material products, by increasing the supply of some as compared with others. If Crusoe liked caring for animals better than he liked to dig and plant, he would spend more time with his flocks and less time in his garden than if he liked both kinds of work equally well. He would more or less unconsciously choose his work differently than if he were merely weighing meat against vegetables as kinds of food. He is choosing psychic income rather than mere physical objects, and therefore the value of the objects is still further out of line with the time-amounts of labor put upon the material goods.

In view of these facts it is clear that the values of products of equal periods of one's own labor (i.e., the part attributable to labor) have very unequal values to the isolated laborer.

§ 5. **Rewards and sacrifices incident to occupations.** Even those men who are equally fitted for several occupations have many motives besides the material result to choose one calling rather than another. Many of these motives result from differences in purely personal qualities of temperament and habit (we are not considering now differences in ability). One man enjoys being out-of-doors or likes physical exercise, another prefers a sedentary occupation, one delights in esthetic surroundings, another prefers to work with machinery more than do most other men. (See above, section 4, on Crusoe's choice of the work he liked.) But besides these differences from man to man there are differences inherent in the occupations, which make them more or less attractive to

most men apart from the evident labor income that they yield. The material products obtained from labor (or the wages received, see next chapter) are far from representing the net total of desirability of that occupation as a whole.

If now there are two or more occupations that are equally open to men of a certain grade of ability, but that are unequal in attractiveness, the more attractive will be chosen by more men. Therefore in that occupation the supply of labor will be greater, the services more abundant, and the value attributable to the labor must be less than in the other occupation. Thus it often happens that material labor-incomes evidently are unequal in two or more trades calling for the same natural ability; or again two laborers of very unequal ability are getting equal material labor-incomes—indeed the higher income may even go to the less capable man.

A little study of actual conditions usually suffices to clear away our first impression of irrationality in such cases. "Man does not live by bread alone," neither does one choose his work in life with regard solely to material rewards. The total attractiveness of occupations (as judged by the laborer) depends in part on certain elements of psychic income, plus or minus, on certain costs or deductions which must be taken into account in one trade more than another, and on certain long-time or ultimate advantages or disadvantages attached to the pursuit of particular occupations.

§ 6. **Psychic factors in labor-incomes.** (a) Occupations differ in strenuousness, or degree of exertion required, some calling for the output of muscular energy to the point of exhaustion, or requiring long hours (mills with twelve-hour shifts), or night work. For the same reward most men would prefer day work, short hours, and only moderate exertion.

(b) Occupations differ in agreeableness. Cleanliness of store, office, or shop, permitting the wearing of clean clothes is valued highly by some men and still more by young women, who therefore (among other reasons) are ready to work at clerical occupations for much lower wages than they could get

in mechanical trades or in domestic service. Noise, dust, foul smells, darkness, and lack of ventilation are all things that are avoided by most workers so far as there is any opportunity to choose between these and other conditions without too great a sacrifice of other advantages. Good physical surroundings of rural life make many salaried men content with much smaller incomes than they could get in the city, whereas some laborers cannot be tempted to the country by high wages away from what they deem the greater charms of crowded city streets, the movies, and an occasional glimpse of Coney Island. Congenial companionship is to many natures the greatest need, which outweighs almost any material advantage. The moral conditions in the place of work must accord with one's standards if the work is not to be distasteful. Likewise the suffering imposed by sickness and accidents reduces the agreeableness of an occupation.

(c) Occupations differ in degree of social esteem or disesteem attached to them, and this is to most men an important element of psychic income (positive or negative) in weighing the net rewards of various callings. The measure of social esteem attached to any occupation is no doubt the result of popular judgment as to the quality of persons who usually follow that occupation. If the ministry, some kinds of teaching, the learned professions generally, social service, banking, music, and art rank high in social esteem, it is because in the long run and on the average the public admires the kind of persons (morally and intellectually) who succeed in such work. But the judgment of an occupation becomes somewhat conventionalized, and often those who are lacking in the full measure of the qualities hope by entering the occupation to shine by reflected glory. In turn, it is in the power of any individual in our democratic society to change appreciably the estimate of an occupation in a community by his standard of achievement and of character.

The average pecuniary or material rewards of an occupation are likely to be less in proportion as it enjoys high social

esteem (as compared with occupations requiring the same grade of ability). On the contrary, if the public sentiment against an occupation is strong, those who follow it are often able to get a much larger reward than they could in another calling, as for example, gamblers, a certain type of criminal lawyers, and, in some neighborhoods, saloon keepers and bartenders.

§ 7. **Costs and deductions from nominal labor-incomes.** (a) The difficulties of preparation for the pursuit of various occupations are very unequal (in themselves, quite apart from the differences in natural fitness as among individuals). Partly the inequality lies in the strenuousness of application required of the learner, partly in the length of time before the preparation is finished, partly in the cost incurred for support, for tools and materials, and for instruction. The greater these difficulties the greater the beginner's discouragement from choosing this as compared with other occupations. Hence, unless there are enough other offsetting advantages, the occupation with the high cost of preparation must be more highly rewarded, or nobody would choose these occupations; in other words, the expected labor-incomes[3] (in

[3] But this does not mean that, other things being equal, the difference between the labor-incomes of two occupations must exactly equal the difference in costs of preparation for the two occupations; for the costs are present or in the near future, and the larger labor-incomes are in the more or less distant future, till the end of the probable working life. Hence the problem of time-value enters. The future incomes have a smaller (discounted) value at the present. In many working-men's families the difficulty of meeting present costs of preparation is so great that a large increase of wages or salary is insufficient to induce the beginner to make the sacrifice. (See above ch. 17, secs. 4, 12, on the importance of preparation.) The rate of time-preference in such families is extremely high. The problem here is in nature that of the active investment of capital (see Part V) and involves a large element of uncertainty. Often the expenses of industrial education are returned many fold in the form of larger labor-incomes to the individual, but in some cases the expense is "thrown away" because of the incapacity or of the moral weakness of the learner.

material form or as money-wages) must have a value enough higher to offset at the moment of choice the higher cost of preparation.

(b) The clearly apparent rewards of various occupations are often quite different from the real rewards, judged even in material terms (the amounts of goods received). Partly this is due to special costs required in some cases, such as providing tools (carpenters), wearing better clothes (salesmen and saleswomen), which costs are not entirely offset by social esteem; partly it is due to living in a more expensive neighborhood in one case than in another, as a condition of getting the higher income. For example, the higher wages in the Northern States as compared with the Southern, are in part offset by the need of more clothing and fuel, and by higher costs of house rents and food. In general the cost-of-living in the country districts is less than in cities, varying roughly with the size, and real wages in all these cases are much nearer equality than they appear to be. If this were not so, migration would quickly bring about a closer agreement.

§ 8. **The long-time and ultimate rewards of labor.** (a) Occupations differ on the average in danger to life and limb, and to health, as do also particular establishments in the same occupations, because of differences in lighting, ventilation, dust, fumes, machinery, and methods of safeguarding the workers. Quite apart from the question of agreeableness (treated above, section 6) there are differences in the expectation of income because of medical and other expenses and loss of time from accidents and sickness. This expectation of loss should be, and doubtless is to some degree, offset by a higher wage in a more hazardous occupation, to induce any individual (within the range of his possible choice) to choose it rather than a safe occupation. But it is questionable whether this difference in money-rewards comes anywhere near equaling the chance of loss and danger expressed in money-terms. The reward is definite and present, whereas the danger is distant and vaguely felt. The more needy and

improvident the worker the less he can or will estimate the danger and the more relatively (because of his high rate of time-preference) will he value a slight increase in present reward.

(b) Occupations differ in regularity of employment. The short-time rewards in the seasonal trades, such as bricklaying, mason-work, etc., are usually noticeably higher than in the steady occupations that call for the same kind of ability and preparation. But the more irregular the employment the greater the loss from being out of work, and the smaller is the total annual income as compared with the income earned by the hour, day, week, or month. Much of the difference in labor-incomes in such cases is nominal rather than real.

(c) The chance of success or failure in an occupation enters into the calculations of a beginner. The greater certainty of success in one case must be to some extent offset by higher rewards in the other. This element is of course supplemented or neutralized by other considerations; for example, the small chance of success in law is to some extent offset by opportunities in politics, business, and often in social affairs. In salaried positions the greater chance of success appears in the form of opportunities of promotion. Some less provident or less able to wait take the positions that give a living income from the first, but which lead nowhere, and others take the larger, but more distant income.

In all these cases there is an adjustment of rewards through the choice of occupations. If within the range of choice open to a group of individuals there is one occupation that is less attractive than others in all excepting the material reward (or the money wage) fewer will choose that, and more will choose the more attractive occupation; the result must be a rise of the value of services in the one and a fall in the other, until an equilibrium of net advantages is attained, to those entering or free to choose between the various occupations.

§ 9. **Rarity of ability limiting choice of occupations.** But even if all these psychic factors be duly accounted for,

it is still evident that some men obtain a larger income for their services than others do. This is true whether they consume the results of their own labor, or sell them to others, or work for other men for a wage. Moreover, some labor having the highest value is the least strenuous and performed in the midst of the pleasantest surroundings, whereas most of the labor of the least value is the most arduous, disagreeable, and dangerous to health and to life. The laborers with low incomes thus have a motive to shift to more highly rewarded occupations. Why do they not do it? The answer is that they do to the extent of their respective abilities, knowledge, strength of will, and opportunities (limited of course by habit and by valuation of psychic income). But the various laborers have limited abilities and can not change at will and, despite the unfavorable ratio, they may be compelled to continue at the same work.[4] Just as fields, plows, machinery for various purposes, grade off from the best to the poorest on the margin of use or already discarded, so men differ in their powers of labor. There are high value, low value, and no-value men and services of men.[5] Even were there everywhere entire political freedom, and no legal influence of caste or status hindered the mobility of labor, mobility still would be hindered by the inequality and the rarity of ability. Just as apples can not be changed to peaches or sheep to horses when there is a change in their value, so the unskilled workman can not be changed to a skilled workman quickly, if he ever

[4] Recall the disparity of talents ch. 16, sec. 12.

[5] Recognizing the variety and inequality of human talent, some economists have spoken of the "rent of ability" and of "producers' rent." It is true that the difference in the rewards of labor, like land-rent, reflects the difference in the quality of agents; but this expression (the rent of ability) is to be avoided. While possibly it is suggestive in studying some problems, it is at best only an analogy, and on the whole a misleading one, confusing the terminology of rent and wages and dimming the distinction between free workers and owned and exchangeable wealth. See note on various meanings of rent, at end of ch. 14.

can. The possibility of workers changing within any brief period to occupations necessitating different, not to say higher, training is very small indeed. The individual laborers are constantly trying to adjust themselves, to get into places where they can earn larger incomes. Some move, some emigrate, some seek practice and education. Especially the workers between the ages of fifteen and twenty-five are at the time of life to choose the callings that promise to each the highest reward. Within limits an adjustment is possible, but these limits are not wide or not quickly shifted, and the incomes of particular laborers and groups of laborers continue to be very unequal in different occupations. Such changes of occupation as are made are far from enough to bring the values of the different services and their results to a common level.

§ 10. **Imputation of value to labor and to uses of wealth.** Labor does not work with an equipment of free goods even on Robinson Crusoe's island. (See section 4 above.) Crusoe had a limited stock of cleared land and of other agents, some of which were irreplaceable. His valuation of them was implied in the choice and use made by him of these various agents when used in connection with his labor. A part of the total product of an isolated worker as a matter of value-estimation or imputation is a labor-income. Tho Crusoe had no occasion to apportion exactly the two parts of his divisible income, even a Crusoe in his choices would not attribute the total value of the product to his own labor. He is valuing material agents and labor together in a given economic situation. He might perhaps think and say, "I made this," or, "I made that," but he would constantly and necessarily act in a way that imputed a value to scarce material agents no matter whether much or little labor had been put upon them.

Each kind of goods and each act of labor is valued in accordance with the psychic income which it helps to secure. The value of the psychic income is reflected to the agents of production. An isolated laborer, such as Crusoe, would, however, not have as definite and complete a scale of values as

that which arises in an exchange economy where money serves as a common denominator of values. The independent farmer, producing on his own farm nearly everything he consumes, is able to think somewhat more clearly of his labor and his wealth as separate sources of income, for he can earn wages by working for some one else and he can let his farm for a money-rent. Moreover, he, like Crusoe, is constantly imputing, in his mode of use, a value to the farm and to his own labor. This being true, the phrase "labor produces" is always misleading, for it suggests that the whole product is the result of labor alone, whereas products result from the combined action of the uses of materials and the services of labor. The total value is reflected back and imputed to the various agents in due proportion. The phrase used should always be "labor helps to produce." [6]

[6] The "labor theory of value" survives from the time when the workman's kit of tools was so small that the true labor-income of the handworker was little less than his total receipts. The tinker, the shoemaker, and the tailor, who went from house to house in the old days, thought only in the vaguest way of marking off from their incomes a part to be accounted as the yield of their little outfit of tools. Labor therefore was thought of as the chief and almost the sole cause of the value of goods produced by artisans. The error in this view grew greater and greater with the increase of modern machinery, and it persists in many fallacious notions not only in popular thought but in systematic economics.

CHAPTER 19

PRINCIPLES OF WAGES

§ 1. The price of labor. § 2. The self-directing laborer's income from sale of products. § 3. Shifting of labor to the point of highest return to the laborer. § 4. Fees for temporary direct services. § 5. The continuous wage-contract for personal service. § 6. Price of labor employed on products to sell. § 7. Various grades of labor and rates of wages. § 8. Doctrine of non-competing classes. § 9. Basis of the personal bargaining power in the wage-contract. § 10. Friction in the adjustment of wages. § 11. Uniqueness of separate services. § 12. Labor-incomes and wealth-incomes. § 13. The wage system. § 14. Wages and the general economic situation. Notes on The labor-theory of value, Various methods of remuneration, Real wages in Europe and America, and Value versus utility of labor.

§ 1. **The price of labor.** In the last chapter have been considered the circumstances affecting the value of human services. The labor has value in the estimation of some person or persons because the labor yields a psychic income either directly or indirectly. We now turn to consider the price of labor. Just as the value of direct commodities comes to be expressed in a price in sale, and as the value of the uses of durable agents (usance) comes to have a price called rent, so the value of any labor that is capable of being sold, that is performed for another for pay, comes to bear a price called wage, or wages.

Like every price, wage involves a contractual relation more or less temporary, between two persons, the one selling and the other buying labor. The buyer is the employer and the seller is the employee, or the wageworker, or the hired man. All that has been said above of the principles of value in relation to labor, holds of course of wages, whenever the labor is

being measured in a market and its value is being expressed in terms of something paid for the labor.[1]

§ 2. **The self-directing laborer's income from sale of products.** Before considering the case of contractual wage-payment, where one man is hired by another, let us see what occurs when a number of self-directing laborers come together into trading relations with their products. In this case there is a market for goods and there are prices for goods that have been produced by the aid of labor, but there are only valuations and not prices for labor services. Such was the state of industry in early and medieval times, and in large measure these conditions still are found in modern society. Each trader would originally come to the market with a scale of valuations for all his different goods, reflecting his own unequal fitness for different tasks, and he would meet men having very different scales of valuation due to the variety and disparity of their talents. If one man can make arrows and canoes very well but is too slow to hunt, and the other is a good hunter but a poor worker in wood, there is mutual gain in division of labor and barter. (See Chapter 5, section 7.) If several traders are present so that the higgling element of isolated barter is reduced, a true market-price is found for the goods resulting from each laborer's services. In the presence of this price the individual valuations are adjusted to the whole economic situation, are socialized in the market. (See above, Chapter 7.)

Goods exchanged in this way evidently are not valued according to the amount of labor measured by labor-hours, or by painful exertion. They are valued by the strength of de-

[1] The wage being a tangible market-fact was first studied when economics began to be a science, and it was seen that the wage was but the reflection of a valuable service. So the term wage was extended to this value of the service which was called the "natural wage" —more often of late the "economic wage." In this book, however, the term wages is confined to the price aspect of labor, while labor-yield (which is labor-income to some person) is the physical product or the valued service given off by an action.

sires as expressed in choice; some goods that are produced easily by little labor may have a high value, and other goods that are produced by much hard and disagreeable labor must have a low value.[2]

§ 3. **Shifting of labor to the point of highest return to the laborer.** The fisherman as he follows his vocation (as a self-directing laborer) gets an income in the form of the price of the fish he catches every day (less cost of maintaining his equipment). The value of this income is a complex of the usance attributable to the equipment, a very small amount, and of the value of his own labor. The market conditions for fish determine the value of his labor. If in the long run he earns less than he could get in another equally agreeable occupation requiring no greater equipment, to which he will and can transfer, he will leave fishing. If he does change and gets a larger labor-income this is but the reflection of the higher-priced product in the new occupation. Similarly, the gold-miner, working with simple tools in the days of placer-mining, got an income determined by the value of the gold he washed out. It was for this that he gave up his former occupation and went to the gold fields. In like manner the farmer, the cloth weaver, the furniture maker, etc., would find the occupation in which his labor would produce goods of the greatest value (differences of psychic income being allowed for).[3] Thus we must conceive of a state of equilibrium where each kind of labor would be applied to the production of that kind of goods which will yield it the largest possible income, and where there is no one at the moment that can change to an occupation paying better on the whole.

In any labor market, each grade of labor may be looked upon as a potential supply of desirable things and its value is determined as if it were an actual supply. If all the various goods, psychic and material, that labor produces were spread out before men in visible form, some would be in great

[2] See note at end of chapter, on The labor-theory of value.

[3] See note at end of chapter, on Value versus utility of labor.

demand, some would exchange at a very unfavorable ratio with others. The market for goods would come to equilibrium at a point where each buyer had adjusted his supply of services in the most favorable way, had distributed his purchasing power, as represented by his labor, so as to get those kinds and amounts of goods (including services of others) which gratify his desires in the highest possible manner.

Corresponding with this state of equilibrium on the buyers' side, would be at the point of the theoretically correct market-price, an equilibrium on the sellers' side. Wherever and in so far as free competition exists, there is a constant adjustment and striving toward such a state of equilibrium. Each workman is moving into the industry where he earns the highest amount possible to him; that is, the highest price which any of his fellow-men are willing to pay for the service (embodied in goods) which he can and will perform. Each man's income is determined by the desirability of his services as bid for by the other members of his community. His value to others determines his economic place just as the specific gravity of liquids of different densities poured into a glass determines their place. In actual life various disturbing factors prevent the full realization of this condition, but the practical process by which labor is valued is that which we have been describing. Each laborer in a true market should get close to what his services "are worth" in the sense of their economic value to the purchaser.[4]

[4] This in no wise is to be taken to assert the social desirability of low wages, or the justice of actual wages either in any particular case or in general. Some thinkers have assumed and have asserted that the competitive wage is the wage which is "theoretically correct" in an *ethical* sense. The process of valuation which we are describing, however, leads us to the conclusion that under competitive conditions a man gets what he "is worth" to the purchaser merely in the value sense; he gets the maximum sum possible in view of the nature of his service and of the existing conditions of demand and supply. But these conditions are more or less dependent at any given time upon various antecedent circumstances, such as the distribution of wealth, inheritance,

§ 4. **Fees for temporary direct services.** On the very borderline between the class of self-directing laborers and regular wage-employees is the class of laborers which is temporarily employed to do a definite service directly for others, receiving therefor a payment or fee. The barber shaves his patron, the ferryman takes the traveler across the river, the boy carries a message, the surgeon sets a broken arm. Of a like nature are the fees for services of bootblacks, messengers, porters, doctors, lawyers, etc., when there is no continuing contract of employment. Each performs a valuable service, which is sold to the beneficiary but produces no long-abiding material result, and no separable, saleable, material good. Little different is the case of custom-made production once very common, now infrequent, where the customer took his own cloth to the tailor to be made into a suit, leather to the cobbler to be made into shoes, and wheat to the miller to be ground into flour. The artisan owned his own tools, and stayed in his own shop, and was paid for the definite service of imparting new form-value to the materials. There, clearly, his earnings in the long run would be adjusted in a market for labor services.

When the buyer of labor is a merchant who supplies the materials and pays for the form-change made in the home or shop of the worker, the system of work is called domestic production, sometimes factor or commission work, sometimes, in cities, tenement-house work. This is still common in the weaving of silk in Europe, and in the manufacture of clothing in America, and in some other cases. The artisan has here less independent action, has no dealing directly with the ultimate consumer of his services, and is very near to being a piece-price wage-earner; but if he still owns his tools it is not a clear case of wage-payment. We hesitate to call any of these

the growth of population in the different classes of society, etc. Our present analysis, therefore, involves no ethical judgment of a competitive wage-scale one way or another. That is a question for separate consideration.

cases of wage-payment, tho they come very near to it. But when we come to the case of the artisan (e.g., a carpenter), even tho he may own his own tools, who works for an employer in a place chosen and controlled by the employer, we consider it a case of wage-payment. In these border cases we see very plainly how the services are valued and sold apart from the material to which they are applied.

§ 5. **The continued wage contract for personal services.** In ordinary domestic service the laborer is employed for a longer or shorter time to give a series of services, some personal and direct, and others more or less indirect. The wealthy man does not hire a coachman each time he wishes to take a ride, but having summed up the advantages of a coachman's services, he buys them by the month or the year. The price is determined in the market for coachmen of the needed ability, qualities ranging from stupid to bright, from weak to strong, and from drunk to sober. Instead of buying flowers from day to day, a wealthy man hires a gardener to cultivate them in a conservatory. The average market-price of flowers influences the wages paid to the gardener, his wages being but the sum of the values (or of his imputed part in the values) of flowers, well-kept lawn, and garden products. Of a like nature are the services of cooks, waiters, tutors, musicians, and teachers in private employment, etc. Between two and three million persons are employed in this way in America. According to the conditions of each household and of the general market, the one or the other mode of buying these services and products is the more advantageous to the consumer. The wages of gardeners in private employ must be in pretty close agreement with the wages of those working in commercial gardening, and with the labor-incomes of the simpler self-employing gardeners.

§ 6. **Price of labor employed on products to sell.** The payment of the laborer to produce goods for exchange is the most common modern case of wages. The relation of wages to the value of the product is in this case more complex, for

the employer is directing the labor to meeting the desires of others, not his own desires. It is by rightly anticipating the desires of prospective customers for the product, and successfully exchanging or selling it, that the employer is enabled to recover the amounts paid to laborers. When industry becomes complex, the connection between the wages and the price ultimately realized in the product may be broken for a time, but rarely for a very long time. Because of miscalculations, labor is sometimes employed on things that prove to be quite valueless, and on other things that have a much greater value than was expected. When months or years intervene before the price of the labor is realized in the sale of the product, the employer must forecast the outcome as best he can, and employ labor only when the wages promise to be recovered. These are complicating facts, but in any logical view they do not falsify the principle that wages are but the commuted, or reflected price of the product (i.e., of that portion of the product which under market conditions, is reflected to the labor).[5]

Let us recall again that labor is only one of the elements entering into the product. (See last chapter, section 10.) Each agent in industry, whether it be a plow, a horse, or a man, is valued in connection with other agents, never apart or isolated. It is not the total service that any one of them performs that can be got at; all that can be got at is the value attributed to the marginal unit of supply, that is to every unit of like quality in the whole economic situation. Each agent is considered in combination with other things at a given moment under existing conditions. Within limits labor may be substituted for the other elements, fewer machines being used and more laborers, or vice versa. It is said that the price of mules at the Pennsylvania mines is affected by immigration, for a mule and a man may for some purposes be substituted. No more will be given for any labor than

[5] The place of the employer as midway between laborer and consumer, is more fully treated later, under enterprise, in Part V.

the employer expects it to add to the value of the product. The employer is constantly testing the value of each kind of labor in his own establishment with the value of other agents of production.[6] In any state of the labor market the wages of any labor or class of labor tend to conform to the value of the services to the employer, and the value to the employer is determined by the price which the ultimate consumers will pay for the product.[7]

§ 7. **Various grades of labor and rates of wages.** Every grade and kind of ability has its rate of wages. The term general rate of wages can be used only of a certain grade of labor and of the rate for the average worker. Also it is sometimes convenient to speak in a broad but inexact way of "a general rate of wages," when comparing different countries and periods. When it is said that the rate of wages is higher in America than in England, in England than in France, in France than in India, the comparison is between men of the same occupation in the different countries; e.g., the unskilled laborer or the mechanic gets more here than the same grade of laborer gets in England. There is, however, no such a thing as a general rate of wages for all laborers and for all industries any more than there is a general rate of land-rent for all acres of land. In any one kind of factory all grades of ability are required, from the pattern maker and the engineer, down to the roustabout in the yard. The industries of manufacturing, commerce, and education alike require the

[6] It is only in this superficial sense and as seen from the employer's standpoint that wages may be said to be determined by productivity. It is productivity in the sense of profitableness or selling price to the employer beyond which he will not go. There is no such thing as a separate determinable physical productivity that is due to labor. Only more or less of the value of the product may, under the conditions of the market, be imputed to the various factors of production. To say therefore that wages *are determined by* productivity is to define in identical terms: the price of the product is determined by the price of the product.

[7] See note on Various methods of remuneration, at the end of chapter.

coöperation of bookkeepers, janitors, carpenters, and superintendents. The wages of different grades of ability within the same industry differ more markedly than do the wages of particular classes of workers in different industries. For example, a bookkeeper of a certain grade of skill gets about the same whether employed in a factory, a store, or a railroad office.

When wages are paid in the form of money it becomes important to distinguish between *real* and *nominal* wages. Nominal wages are expressed in money, and real wages in amount of uses and services the money will buy. In comparing the wages of different classes in the same country, or of the same class in different countries, or of the same class at different periods of time, real and nominal wages show very different situations and changes. In determining the net advantages of various occupations men must include, as we have seen, many intangible elements. (See Chapter 18.) But in the term real wages nothing more is included than the quantity of useful goods (cloth, food, etc.), and of rentable uses which can be bought at current prices with the money wages. This is an imperfect but often very enlightening comparison.[8]

§ 8. **Doctrine of non-competing classes.** Whatever be the methods of remuneration and the scales of wages prevailing in the various industries and localities, the laborers make their choices among the various occupations and places of work open to them. They move from factory to factory, from trade to trade, from town to town, from state to state, from one country to another, seeking each to better his fortune or to maintain it unimpaired. The worker is striving to get for his labor the maximum, all things considered, (as set forth in Chapter 18, section 9) as the employer is usually striving to get the needed service at the lowest price. When this is so, the conditions of a two-sided market are present and a price for each laborer's services results.

The variety in human talents and the many difficulties and

[8] See note on Real wages in Europe and America at end of chapter.

motives which hinder the change from one occupation to another (set forth in Chapters 16 to 18, also section 3 above) result in a large measure of immobility, or lack of interchangeability as between different kinds of labor. This limited power of adjustment not only fixes the individual in a trade his life long, but it marks off whole groups from each other through hereditary, social, and geographical barriers. This has been put into the form of a doctrine of non-competing classes of labor, a brief statement of which may help us to see the problem of relative wages of various laborers as one of the mutual valuations of services. It is, however, but a restatement of the ideas already presented here.

Workers may be thought of at any period as grouped in classes, not only as to different occupations (such as carpentry, typesetting, etc.) but as to grades of ability in performing the various tasks. Each class has its value determined by the market conditions, as for the time a separate object of value having a comparatively fixed supply, and not a part of a homogeneous mass of services. Within any period, greater or less changes in the value of the products of one class of labor may occur, and be reflected in a higher or lower value of the labor. Only in a small degree, and exceptionally, can an adult worker make any considerable change in the character and grade of his work. Only in a small degree can or do young workers enter into classes of occupations that are higher, more skilled, than those of their fathers. Partly they are prevented by lack of natural ability and partly by ignorance of opportunities, and partly by the difficulties and expense of training and preparation. The change of any one worker from a lower group to a higher affects the value of the services of both groups by reducing the supply of labor in the low-paid and increasing the supply in the higher paid occupation. Yet such changes as are made always have fallen far short of leveling the value of services in all industries and undoubtedly always must do so.

This doctrine may be represented schematically by a pyra-

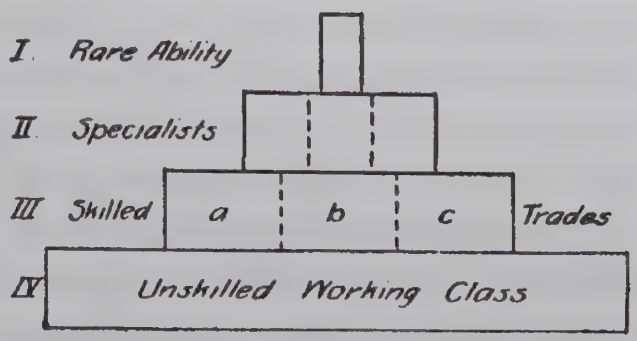


FIG. 30. NON-COMPETING CLASSES.

mid. A young man of certain ability and under certain conditions may be able to fit himself for any one of several occupations, *a*, *b*, or *c* in class III. After he has mastered any trade (say IIIa) he may be able to advance (to class II) but in most cases he would find it each year increasingly difficult to do so. It is however easier to change on the same plane than to move upward, and it is usually still easier to go downward than to change on the same plane. In the extreme cases the value of the labor of any two non-competing classes is fixed as if each class occupied a separate island, and could not change occupations, but could only exchange products at the ratio resulting from the reciprocal bidding of the traders. (See Chapter 7, section 3.) The masses of the workers in any two countries of different resources and density of population, such for example as the United States and Italy or China, are to a certain degree in non-competing classes. If immigration is unrestricted by law, all that keeps wages from becoming identical for like classes of workers (as carpenters, painters, etc.) in the two countries is the difficulty of migration.[9]

§ 9. **Basis of the personal bargaining power in the wage-contract.** We arrived at the explanation that the price of labor bought by an employer must be related to and depend on the value of the services bought. Wages, just as the prices

[9] This doctrine was given its name by the English economist J. E. Cairnes (Some Leading Principles of Political Economy, Newly Expounded, 1874). As presented by him the doctrine was given a very different emphasis, for he supposed it to be a rare and remarkable exception to what he believed was the general rule, that the cost-of-production regulated the price of goods,—essentially a "labor-theory of value." We regard it merely as a helpful way of presenting a particular case of the general rule that the value of agents is derived from their products when the market is viewed as a whole.

of commodities, depend on the values in the minds of the various traders, and these values in turn are the reflection of consumers' choice. But the personal element of bargaining between man and man seems to obscure our view of the motives determining wages much more than of the motives determining commodity prices. If the fisher and the miner bring their products to the general market, the question uppermost is the price the product shall bring, and their labor-incomes are easily seen to be the price of the material products (less certain costs and allowance for equipment) (see above, section 3). But if an employer hires a number of workmen, and the labor of each becomes merged and lost to view in a complex product, what part of this undivided product is, on value-principles, imputable to the labor? If we lose hold of a guiding principle of value, there is danger that we shall see only the superficial fact of the personal bargain between employer and workman. Sometimes the personal power of the employer looms so large that he is thought to "pay whatever he pleases," sometimes wages seem to depend on the whim of labor leaders, sometimes on the monopolistic power of organized labor. This way of viewing the problem has even been dignified with the name of "the bargain theory of wages." Such a view overlooks the logical cause of value, and the network of impersonal forces which enwraps and binds the personal bargain. What makes the employer "please" to pay as much as he does; what is there in the economic situation that at one time gives to the labor leader bargaining power to get an advance of wages, and at another time does not? These are questions whose answers help us to go deeper into the explanation of wages.

The truth seems to be that while wages paid by an employer result from a bargain, this in turn rests on the same causes of value as does the bargain for material agents (commodity prices, rents, as also interest rates), that is, on the direct or indirect effect of labor in the gratifying of desires. When the employer is producing goods to sell he is acting as a mid-

dleman between the employee and the ultimate consumers whose desires combine to impart value to the labor used. The greater the demand for labor services and the more limited the group of laborers that can render these services, the greater is the bargaining power, and *vice versa*. Bargaining power is simply the power to bring about a true equilibrium price inherent in the economic situation.

§ 10. **Friction in the adjustment of wages.** The conformity of actual wages to the true equilibrium price under any given market conditions is never complete. Actual wages may be said, in somewhat indefinite phrase, to have "a tendency to conform," to an abstract competitive price, meaning that the most fundamental forces are always working to that end. These forces, however, are counteracted by many other influences, some slight and temporary, and others strong and long continued. We do not here refer to such things as monopolistic power of organization which, however artificial it may seem, is a part of the economic situation for the time and determines the market-price. We refer to other conditions, such as the following.

The wage received by any particular employee may be higher or lower than those of other workers and than the true market-price as a result of favoritism, due to friendship, relationship, or bribery, in private employ, in corporations, or in government service.

As a whole, the prices of labor have more inertia and more momentum than do prices of material commodities. As the prices of the commodities that labor helps to produce go up or down, wages follow more slowly. This is true of wages whether the change is in the general scale of prices (see the standard of deferred payments in Vol. II) or in the price of the particular class of goods. Habits of thought count for more in wages than in most other prices. Caste and custom are great influences making for inertia of wages. The laborer thinks of his labor as worth *so much*, and in general is slow to ask more, and is loath to take less than he has been getting.

Combinations of workers may hasten the rise and retard the fall of the prevailing scale of wages. The adjustment of labor-supply to commodity prices is in large part brought about, therefore, when prices of products rise, by taking on less capable workers at the same wages, and by working more regularly and for more hours; and when prices fall, by throwing the less efficient workers out of employment, and by working fewer hours. In contrast with wages, profits are quickly adjusted to price changes, going up quickly when prices of products rise, and going down, often for a time to a minus quantity, when prices fall. (See later under profits and enterprise.)

§ 11. **Uniqueness of separate services.** In many cases the individual employee can not get higher wages because of his immobility. He (or she) has a home, and must live at home, and tho he may have greatly improved in efficiency in the particular position, may not be able to accept positions open elsewhere at much higher salaries. He can not sell his labor in an open market. Many positions of confidence and trust are such that it requires years of experience to gain efficiency, yet that experience and efficiency pertain to that particular job, and can not be in large part transferred elsewhere. In such situations the employer may be able to retain this person, under existing market conditions, for less than he would have to pay to get some one else to fill the position satisfactorily.

On the other hand an employer often is forced to pay a higher wage to hold an employee than on general price conditions is warranted, in order to hold the services that have become particularly valuable to his business. In many cases, too, old employees are retained after they could be replaced by more efficient men at the same or lower salaries. Services are well-nigh the least standardized of all saleable things, and in countless cases both the laborer and his job have more or less the character of *uniqueness;* that is, there is no other job exactly like this one and no other laborer exactly suited for

that particular work. These are facts which must neither be overlooked nor exaggerated to the point of obscuring the general conformity of wages to market conditions.

§ 12. **Labor-incomes and wealth-incomes.** The fundamental principles of value and price apply fully to labor, as we have said. (See above, Chapter 18, section 1.) But the sale of the services of human beings is marked by important conditions—moral, political, social, and consequently also economic—which distinguish it from the ordinary sale of material wealth. The distinction between men and things is from all these standpoints both of theoretical and of practical importance. It will not do to say: "The law of wages? Labor is a commodity, that 's all." Taking one point of view, and seeing only the value element common to all economic agents, we may be tempted to merge all in one category, and to say that men also are a form of wealth.[10] In a democratic society where there is no chattel slavery and each worker must be deemed to be a free political agent, this distinction between men and things is largely what gives political economy any significance. In the social applications of economics, wealth is always but a means to an end, whereas man is both a means (as laborer) and the end itself (human welfare).

Men and wealth, the two great classes of economic agents, are severally and in combination the sole source of all economic incomes. The corresponding classes of incomes are labor-incomes and wealth-incomes.[11] The former of these

10 As has been done by many economists. Very commonly, also, men are spoken of in popular discussion as capital or as wealth—a very questionable terminology.

11 See definition of labor-incomes, ch. 18, sec. 1. It is well to observe that this term has, in certain interesting and valuable rural surveys, been used in a peculiar and restricted sense, that of the amount of clear gain that a farmer may fairly attribute to his own services (after making due allowance for the usual rate of return on his total investment) *in addition to the personal usance of his house, yard, and other wealth (horses, carriages, etc.) and to all the products of farm (food, fuel, etc.) that are consumed by himself and family.* The term as thus under-

makes a greater aggregate amount, made up, however, of many incomes, nearly all small. The great majority of the people of any country live mostly on labor-incomes, their own or from members of their family. This is true even if all the psychic incomes of personal service for one's self and family be overlooked, and only the more material forms of income, such as are ordinarily regarded in income statistics (material products and money wages) be reckoned. At the same time there is no family so destitute that a part of its psychic income is not obtained from the usufructs of durable wealth (uses of clothing, cooking utensils, furniture), and there are millions whose labor-income in the form of goods and money is supplemented to a considerable degree by incomes from some wealth or claim upon other men. There are the agricultural workers, some of them land owners or partly land owners, and nearly all of them to some extent tool owners. There are many city dwellers owning their stores and manufacturing establishments in whole or in part, and many more owning houses; there are in America nearly nine million depositors in savings banks (many persons and families being duplicated). Millions of other persons hold, through mortgages, bonds and shares, claims on real estate, small businesses, or on corporations (later treated more fully under "capital"). There are the accumulated funds of insurance companies, fraternal orders and societies, owned collectively by members and policyholders. There are the psychic incomes shared by the masses of the people in the use of schools, museums, libraries, buildings and all other enjoyable public property. The labor income is thus in the case of individuals or families but the part of income which is due and attributable to the valuable efforts they have rendered to themselves or others. This form of income stops when the man dies or fails to perform his work; the income from wealth goes on. Thus families with equal

stood is of course unsuitable for a more general economic application, and even in its special use, it unfortunately opens the way to some misunderstanding of the results of the surveys.

incomes may receive them from sources of very different stability and duration.

§ 13. **The wage system.** A large part of the labor-incomes in society as it is at present are received in the form of wages. Indeed our present economic organization is often called "the wage system." By this is meant: an organization of industry wherein some men, in control of the material agents, buy at their competitive price the labor of other men. The wage system implies a contract between employer and employed. The relation or bond between them is that of a wage payment, either in money or in kind. The wage system is a method of organization never found completely realized. A community made up entirely of independent small farmers, living each on his little patch of ground, could not have any essential feature of the wage system. Wherever are found considerable numbers of independent small farmers and other self-employing laborers, as is everywhere in large measure the case, the wage system does not exist in complete form.[12] Some men with more or less wealth in every community are working for wages, while others are independent producers and are their own employers. Society is not sharply divided into two classes, one controlling all the material equipment, the other with only their bare labor to sell. The wage system may be spoken of as prevailing to-day not as the exclusive, but as the typical, dominant, and slowly increasing form of industrial organization, while side by side or along with it is found independent production.

§ 14. **Wages and the general economic situation.** Our statement of the theory of wages has now been brought

[12] In fact, of all those over 10 years old engaged in agriculture, forestry, and animal husbandry (in 1910, a total of about 12,700,000 persons) about one half were operating owners, one fourth were laborers on the home farm, and only one fourth were farm laborers "working out," that is, for wages outside the family. In manufactures, however, wage-workers average 25 per establishment; and in mining and in transportation the average proportion of wage-workers to enterprises is much larger.

to a provisional stopping point. But the reader should be aware of the limitations of our treatment. We have outlined a theory of wages assuming a certain economic situation; we have passed in review the various motives and characteristics of men which help to explain the ratio in which the various kinds of services are valued in terms of each other. While we have recognized the presence and effect of material resources and of manifold instrumental goods as being indispensable to the use of labor, we have said little of the effects that changes in their amount would have on the whole economic situation. We have, in other words, outlined only a static (or equilibrium) theory of labor-incomes, and not a dynamic theory.

But the level of the general scale of wages is a part of a general economic situation and is dependent on the relation of population to all material resources, artificial and natural, on the progress of education, of science, and of the industrial arts, and on many other factors. The foregoing theory of wages therefore is only provisional, not that it must be essentially changed, but that it must later be materially enlarged and completed. The study of the value of labor is not a thing apart from that of the value of other agents. Each succeeding chapter from this point on will supplement the foregoing treatment of labor and wages. Especially in the last part of this volume (Chapters 32–39) will be discussed the great underlying conditions on which depends the general economic situation in which and by which the level of labor-incomes is determined.

NOTES

The labor-theory of value. Things go thus in the real world, however the student or the generous-minded social reformer at times may be tempted to shut his eyes to the truth, feeling that value *ought to* be in proportion to labor-time or to the unpleasantness of labor. There is a close correspondence, even identity, between the value of the goods and the value of the labor that produced them, but it is the value of the goods that is reflected to the labor, and not the reverse. For, if labor having a high value reflected from one product be applied to another product

that has a low value, the value of that labor is in so far thrown away. As we saw, the values of goods resulting from equal labor-time of an isolated laborer are often unequal; and *a fortiori* the values of equal labor-times are sure to be still more unequal when the products result from the labor of different men of varied abilities and natures, trading in a community. There is therefore no unit of labor-time which can serve as a standard of the values of goods or which is embodied in equal proportions in goods of equal value. Rather, it appears that labor services are compared as to value only through the values they derive from their products. We thus speak of equal quantities of labor not as equal in time, but as equal in value, as so many dollars' worth.

It would be unnecessary to dwell on this truth were it not for the very common illusion that labor may be taken as the standard of value, and were it not for the frequent recurrence of the fallacious idea that goods in a market embody so-called labor-units in exact proportion to their values.

This idea that the value of goods is determined and measured by the quantity of labor put into them, is the "labor-theory of value" (not to be confused with the theory of the value of labor). It assumes that there is such a thing as a common standard unit of labor, a definite quantum, measurable antecedent to the value of the products. The labor-theory of value appears in manifold disguises both in popular doctrines and in systematic treatises on economics. The error in the theory is evident, first, because various kinds of labor differ in quality (or kind) not merely in quantity (or time) and, in truth, it is only through the values of their products that the different qualities of labor can be compared (singing with wood-chopping); secondly, because the values of goods differ not only with the labor applied (even if it were all of one quality) but with the amount of complementary agents used; thirdly, because of the differences in time elapsing between the application of labor, and the ultimate valuable results of the productive process. (Of this more below, under time-value.)

Various methods of remuneration. Many methods are employed to measure the services of wage workers, the main ones being by time and by the piece. In time work (by the hour, day, week, month, or year) a general average output is assumed, and the workman must come up to that standard if he is to hold his place. In piece work, the price per piece must be enough to make possible the prevailing time wage to workers of that grade if the supply is to be maintained in that industry. The piece price method is combined with time work, and is varied in many ways by giving premiums or bonuses for larger outputs within a given period. The conveniences of the different methods of payment vary from industry to industry, and even from task to

task within the same factory, so that now one, now another method is followed. In any case, however, the aim is to find some convenient unit of service for the measurement of the amount of labor to be paid for, and to give a motive for efficiency to the worker. The wages paid by the various methods of remuneration—as by time, by the piece, by premium for output—all conform in a general way to the value of the service imputed through bidders in the market.

Real wages in Europe and America. Bearing in mind the limitations mentioned in sec. 7, the results of a study made by the British Board of Trade as to the conditions of the working classes in the cities of five different countries (about the years 1908–11) are here given. The further caution must be given that only certain groups of trades were investigated, those in building, engineering, and printing; and that the cost of living was taken only for food and rent (figures of rent here given are the average for two to six room apartments). The cost of living is calculated by assuming that food cost represents half of the cost of living and rent the other half. In fact food constitutes something less than half, rent only about one fifth; but it will be observed that rents vary pretty closely in accord with money wages, and that the cost of things bought with the rest of wages, after paying for food and rent, consists very largely of the cost of labor. The figures are merely proportional (taking England as a base) and do not express any particular unit of money.

	Money wages	Food cost	Rent	Cost of living	Real wages England as base	Real wages U. S. as base
United States..	232	138	225	182	128	100
England	100	100	100	100	100	78
France	75	99	81	90	83	65
Belgium	63	99	62	81	78	61
Germany	83	117	99	108	77	60

The indication is that money wages in the United States were from about two and a third times to nearly four times as high as those of other countries; but that the workingman's cost of living was from nearly two to two and a third times as high in the United States. As a result the day's wage in the other countries would buy from 40 to 22 per cent less than it would in the United States.

In considering these statistics it must be remembered that the wages in skilled trades (such as those here included) are higher relatively in the United States than are the wages of unskilled labor (especially in Germany) and also that far better provision had at that time been made in the continental countries of Europe than in either England or

the United States for insurance against sickness, accident, old age pensions, etc.

Value versus utility of labor. Observe that all our discussion here has related to the *value* and not to the *utility* of labor. The explanation of value is found in the desires and choices of men, with all their folly and blunders of judgment. More often perhaps in the case of human services than elsewhere, value is found to be in conflict with utility, properly conceived (see ch. 3, sec. 4) and properly estimated. Many of the kinds of labor that are indispensable to the very existence of men have small value (e.g., common labor used in producing food, clothing, shelter, protection from the elements, for the rescue or preservation of human lives). The qualities needed in such work vary from man to man it is true, but they are common, found in large measure in nearly all men. Such callings require merely the physical strength that most men have, a modicum of intelligence to understand and obey orders, and the moderate degree of skill that can be acquired by brief practice. Almost every one (unless weakened by years of sedentary, non-physical occupation) can, in case of need, take up such work at once. Labor thus plentiful in relation to the demand whether it be used for useful ends (such as flowers or food) or for harmful ends (such as opium made from flowers or whisky made from corn) bears a low value.

On the other hand it is the getting out of such an occupation, not the getting into it, that requires a little more than commonplace intelligence, forethought by one's self or by one's parents, persistence, and other qualities. The serious lack of any one of these disqualifies for most occupations that yield large labor-incomes. Many of the services valued highly are of a sort distinctly not of utility. Some services are highly rewarded for gratifying the esthetic tastes of a few (luxurious decorations, operatic singing, epicurean tastes in food, etc.), others for pandering to the vices of the many (drinking, gambling, licentiousness). But always the value is set and the price is paid by some one or more buyers who choose such services at the higher value in preference to lower valued services having true utility for themselves and for society. Here as elsewhere it is true that forces are always at work to keep value in some measure of accord with utility in the world as a whole and in the long run.

PART IV

TIME-VALUE AND INTEREST

CHAPTER 20

TIME-PREFERENCE

§ 1. Time as a condition in valuation. § 2. The time element in man's provision for his needs. § 3. Cases where future use is preferred. § 4. Cases where present use is preferred. § 5. Biologic basis for most choice of present use. § 6. Hope and risk as affecting time-preference. § 7. Hastening the ripening process. § 8. Postponing the use and the readiness for use. § 9. Physical change accompanying time-change. Note on Present and future goods, uses, desires.

§ 1. **Time as a condition in valuation.** Let us recall here that every object of choice is characterized, or qualified, in some way with reference to its stuff, form, place, and time; and according as our attention is directed toward the one or the other quality we speak of the stuff-, form-, place-, and time-value. Time-value now calls for fuller consideration.

The luscious fruit on the table makes a certain appeal to us, is valued, as compared with anything else. Why? Partly because of the physical and chemical elements of which it is composed, partly because of the particular form in which those elements are combined, partly because the fruit is close at hand rather than in some distant place, and finally because it is available at the present moment rather than at some future time.

The man who is suffering the pangs of starvation desires food, and he desires it at once. The promise of a good meal at some time in the distant future makes no appeal to him. In great extremity he will pay for food any price within his power. "All that a man hath will he give for his life." A loaf of bread put into his hands at the present moment would

mean more to him than the promise of a whole bakery a year from now. A grasping person, willing to take advantage of him, might get from him a promise to pay almost any sum in the future for present bread. He might agree to pay back at the end of a year five loaves, or ten loaves, or almost any number of loaves in return for the single loaf now which will save his life.

We are dealing here with a case of *time-preference.* The food is preferred at one time rather than another, in this case at present rather than in the future. An extreme case has been cited for purposes of illustration, but it is possible every day and almost every hour to observe cases involving the same kind of preference, that for present goods as compared with an equal amount of like future goods, and other cases where like goods are preferred in the future rather than at present. In every conjuncture of human life, the timeliness of goods is an ever present factor in their valuation, and often it is of the very greatest significance. The demands of consumers always have reference to a particular time, and the business man is always seeking to supply goods at the right time as well as of the right stuff and form and in the right place. Palm-leaf fans are not marketed in winter time, nor overcoats and furs in summer. The promissory note must be paid when due. The bond has a greater value just before an interest payment than just after. And from these limitations of time, as from those of space, there is no escape. A man can not be in two places at once, nor can he command the sun to stand still and halt the passage of time.

§ 2. **The time element in man's provision for his needs.** If the needs of men were supplied from day to day by some outside agency, if the things we need fell like manna from the skies, or if man lived the uncalculating life of some animals, there would be no such thing as time-preference or time-value. The lowest animals live entirely in the present. Their whole activity consists in appropriating whatever agreeable things, or rejecting whatever disagreeable things, are at the mo-

ment within their reach.[1] And with few exceptions even the higher animals live very largely from day to day, as did primitive men and as some men do still in the midst of modern civilization. For these the desires of the present engross almost the entire attention.

But even some of the animals are guided by their feeble intelligence or by instinct to make choices that do involve a relation between goods in the present and in the future. Squirrels, bees, and ants store up in the season of superfluity for the season of scarcity. Man, and especially civilized man, in a far greater measure, takes the future into account in his plans, his calculations, and his labors. He lives his economic life of choice, so to speak, both in the present and in the future. His economic life and his economic judgment comprehend a great number of periods at once. He attempts to provide for the needs of the future almost as carefully as for those of the present. This means a much more complicated adjustment of goods to desires. The typical animal-choice is lacking the time-dimension (the objects and uses are synchronous). The typical human choice is between goods in different periods (the objects and uses are non-synchronous).[2]

§ 3. **Cases where future use is preferred.** It should, however, be carefully observed that time-preference is not always preference for present goods as compared with future goods. We sometimes, indeed very frequently, prefer to have certain things *in the future*. After any meal, the present use of the remaining food in the pantry, the cellar, the granary, is worth less than its possibility of future uses, some of which are a few hours, others a few days, others perhaps weeks distant. (See above, Chapter 4, section 6 and section 7). The changes of the seasons with their effects on the abundance

1 Agreeable or disagreeable mean here only so in accord with (in agreement with) the nervous organization (or vice versa) that the animal reaches out toward, or withdraws from, the object.

2 See note on "Present and future goods, uses, desires," at end of chapter.

of plant and animal life cause a pretty regular cycle of valuations. When the crops are harvested in the fall, the farmer, while setting apart some of the fruits of the field to provide for the present nourishment of himself and family, yet stores up the rest for later use. His immediate needs are oversupplied, and his anticipated future needs induce him to save. In a fishing tribe after a great haul of fish a present fish is worth less than the certainty of a fish six months later when fish will be scarce. After a successful buffalo hunt, when all the members of the tribe are sated with meat, present meat is worth less than the chance of an equal amount of meat any time for nearly a year. Ice has less value in winter both because the need for ice in refrigerators is less, and because ice is more plentiful. In January one would gladly exchange a larger amount of present ice for a smaller amount to be delivered the following July. Crops of fruit, vegetables, etc., are on the average worth less per unit at the moment they are gathered than at any other time in the year until the next crop is due. Coal and wood are worth somewhat less in spring and summer than in the following winter. Fresh eggs in the months of April and May when most plentiful could hardly be exchanged for half the quantity to be delivered in November and December,—despite the attempts to keep them over and thus equalize conditions and values by cold-storage and preserving in enormous quantities.

Such seasonal changes within the year comprise a large proportion of the cases in which present uses are worth less than future uses. The present values of most goods as anticipated through a series of years are adjusted to a pretty regular scale. So far as men can see in advance, one year is going to be much like another. Differences can be allowed for *on the average,* but no one knows just when the greater crop or the crop failure is to occur. So all must be estimated in advance in relation to the average, or normal.[3]

[3] But see ch. 21, sec. 7, for examples of individual differences in estimates.

The preference for future over present use appears in many other relations of life. A fire-engine is less valuable now than it will be when the fire breaks out; indeed its present value is but a diminished reflection of the value we anticipate it will then have. We would gladly exchange the useless engine now, with the trouble and expense of care it involves, for the certainty of a similar engine when the fire occurs. In like manner a warship is less valuable now than is the prospect of its use when war occurs. The gift of a trip to Europe this year is less welcome when one is unable to go than would have been the promise of a trip for next year when one expects a vacation. In countless cases may be heard the words, "I don't care for it just now," or "If only it had been later."[4]

§ 4. **Cases where present use is preferred.** But with all his foresight, and with all his appreciation of future needs, even the most provident of men is, like the animals, compelled to live very largely in the present. There is no such thing as a future desire; there are only present desires for either present or future goods. The needs of the present and the desires for present goods are, in much the larger number of cases, the more insistent. It is not rational (or even possible) to provide for the future until a certain minimum provision, at least, is made for the present. The typical or average preference of men is for present goods or uses. This does not mean, of course, that there is not desire for future goods, but simply that a larger quantity of future goods will exchange for a smaller quantity of present goods. The smaller amount of present goods is regarded as worth as much as the

[4] This proposition that present goods of specific kinds are often valued less than the prospect of like goods later has been so strongly emphasized here because a different statement is often met in economic writings, namely, that present goods are always worth more than future goods of like kind and quantity. The erroneous idea results from thinking in terms of money, the loan of which in a developed money economy comes to command a general prevailing premium, to which the prices of other goods are adjusted. But a piece of money itself may be worth less now than later.

larger amount of future goods. There are numberless illustrations of this type of preference. In the various cases mentioned in the preceding paragraph one would need merely to shift his position in point of time to reverse the order of preference. In the summer a quantity of present ice is valued more than the certainty of the same amount the next winter; in the winter present eggs are valued more than the trustworthy promise of an equal number the next spring. So with fruits and grains just before the new crop matures, the fire-engine when the conflagration is under way, the battleship when the war has begun.

§ 5. **Biologic basis for most choice of present use.** The different time-periods, present and future, and their different economic situations are brought into comparison either by instinctive choice (necessarily involving a ratio of comparison), or by conscious choice between the thing actually present and the future good more or less clearly pictured in the imagination. To take and enjoy things as soon as the desire arises and the means are present seems to be a fundamental trait of men. The impulse to seek immediate gratification is rooted deep in man's biologic nature. It is found in the most elementary forms of animal life (see Chapter 2, sections 1 and 2) and continues to be a powerful guide to action as higher forms of life evolve. It has in the course of evolution been only slowly modified and supplemented by inhibiting instincts and by reason. This impulse is still dominant in the actions of most men, and is ever ready to reassert itself under unusual temptations even in prudent natures. With children and savages and with many civilized men the voluntary postponement of the gratification of desire is of very limited character. Powerful and universal impulses work in favor of present gratification; man's provision for the future occurs only when imagination, reason, habit due to long training, and a strong will to pursue a distant object hold these impulses in check.[5]

[5] It is true that in the social insects (bees and ants) and occasionally among some higher animals (squirrels), the storing of food is an act

§ 6. **Hope and risk as affecting time-preference.** Hope is a blessed gift to man to help him bear the ills of life, but hope does not always operate with great discrimination. Hope of future provision for future needs encourages the present use of goods, leaving the future to care for itself. As the successive years will bring recurring needs, they will, while health and strength continue, bring also recurring supplies of goods. If this were the unbroken rule of life, the most economic use of goods would be to consume each year's products as they come. This, indeed, is the firmly fixed habit of life of a large portion of humanity, even under conditions where the results are clearly bad. In many provident and well-to-do families there are persons who are so sheltered from responsibility in caring for the future, that they blindly trust that good things will continue to come in unlimited quantities. Like the young robin with open mouth, ever eager to be fed, they accept unthinkingly the sacrifices of others. Business reverses, the illness or the death of the responsible member of the family, often leave all unprovided for, those in whom prodigality has thus grown into a habit.

The uncertainty of life likewise strengthens the preference for present over future goods. There are two possibilities of loss by waiting, one that the future goods may not be there ("A bird in the hand is worth two in the bush"), and the other that one may not be there himself to enjoy them. ("Eat, drink and be merry, for to-morrow we die.") Life itself is uncertain, all but the present moment. Each of these risks involves a discount on the future uses as compared with the present. So large is this uncertainty of life among savages, so many die of accidents and wounds, that many tribes are said to have only the vaguest conception of a natural

of instinctive choice and is continued even in circumstances where the least forethought would show the futility of the process. But in man this choice seems to be possible only by the aid of forethought and reason, or of habit acquired by the individual through the earlier exercise of these faculties.

death. In semi-civilized and in rude pioneer days, it was almost the rule to "die with one's boots on." Even in the most regular order of things, to-day's desires have the strongest claims of any desires in one's life, simply because they are the most certain.

In the best ordered plans there is some bad judgment. With most men this is increased by the prevalent under-estimate of the future and by the ever pressing temptations of present desires as compared with the weakness of the appeal of the future. The steady pressure of these motives directs the larger part of the efforts and thought of men toward the providing of present goods, often leaving the future (ever becoming the present) unprovided for. Accident, robbery, fire, storm, war, disease, death, countless mishaps, may bring upon any man, family, or community this maladjustment. Wherever any particular kinds of goods become in this way unusually scarce, they rise in value compared with future goods of like kind and quantity. Time-preference appears, and shows itself in the uses made of all existing economic agents, both objective and human.

§ 7. **Hastening the ripening process.** A man or a family in an isolated economy would, when in urgent need, make efforts to convert future goods if possible into present goods. Sometimes this can not be done, e.g., the starving man in the forest can not hasten the ripening of wild fruits, and the desperate Richard III cries in vain, "My kingdom for a horse." But in many other cases there are ways of converting future into present goods, tho rarely without making some sacrifice for the conversion. (For if they were indeed available at once they would be present goods.)[6]

Future goods of one quality may often be appropriated as present goods of a lower quality, e.g., the future ripe apple is a present green apple, the future matured wine is the present grape juice, the future seasoned lumber is present

[6] Review ch. 10, sec. 4, on the use of indirect agents for hastening the uses of goods.

green lumber. In thousands of artificial ways in modern industry the time needed for acquiring the better physical quality and the higher value, is cut short. In times of siege and famine, goods may be changed entirely from their usual purposes; trees are dug up that the roots may be eaten, and leather is chewed for food. Again, future goods may be hastened into becoming present goods of nearly the same quality by being put through technical processes, e.g., the lumber may be kiln-dried, the fruit may be forced in a hothouse; but as in this process other agents must be used, the present goods and the future goods are somewhat different groups of things presented to choice. Again, to get more present goods the usual care of durable agents may be neglected and their future uses destroyed by taking more than the true present usufruct, as by using up a farm, or by driving a horse to death in going for a doctor, or by burning Indian corn or fruit trees for firewood.

In all these ways the adjustment of choice between present and future goods in the individual economy is constantly going on, reflecting a prevailing time-preference in some person's mind. It will be noted that in every case this adjustment, even when made quite outside of a market and without exchange with other persons, requires a sacrifice of something, either in quality or in quantity, either in valuable labor or in materials taken from other uses. This sacrifice bears some value-ratio, more or less clear, to the time-value of the present good.

§ 8. **Postponing the use and the readiness for use.** If on the other hand there is preference at any time for future goods over present goods of like kind and quantity, adjustment is made as far as possible in the other direction.[7] If the person has but one unit (good or use) to dispose of, the use can be *either* now or later, but not both times. Shall the lunch one has in his basket be eaten now, or kept until noon?

[7] Review ch. 10, sec. 3, on the relation of time to value, and sec. 5 on agencies for postponing the uses of goods.

Shall the rare flask of wine of romance be opened now, or kept for some future greater occasion? Often, however, the question presented is that of distributing a stock of like units, or of like uses, over two or more time-periods. In such a case as the bountiful crop, the surplus overflowing the usual demands of the present is held for the future. The anticipated future desires factor as present desires (more or less weakened by time or perspective it may be). They claim a portion of the present stock, that portion which *if* used at present would have a smaller value. Each unit of like goods, under the law of indifference, must have equal value *at the moment* whether to be used at the present or the future (tho it may have a higher value when later used). Until this adjustment is complete, units are shifted from one time period to another, according to the law of substitution. The possibility of using things later thus gives a valuation to each unit of any present stock of goods higher than it would have if the goods were entirely perishable and usable only in the present. In Figure 31 if the present stock of meat is eight units, the value would sink to one, represented by the line AB. But if four of these units can be kept for the future, the present takes but four units, and the value will be three (line CD) for each unit, whether used in present or in future. Note that units five to eight may be worth more later when they are used, and probably enter into present choice at a discount from their future magnitude.

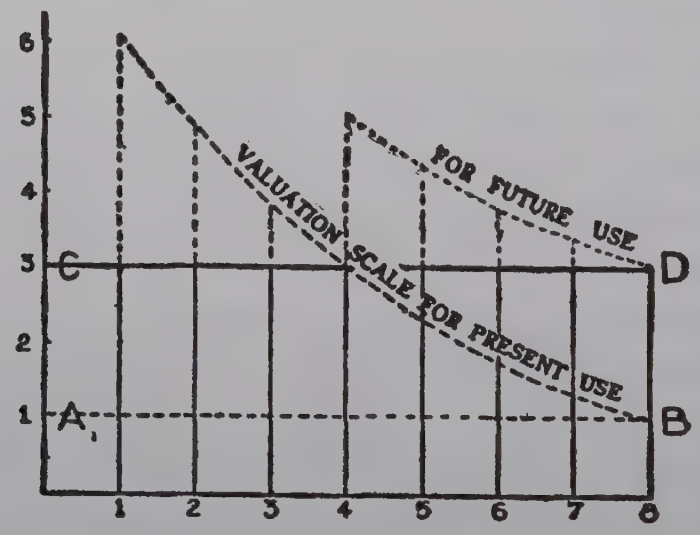


FIG. 31. PRESENT AND FUTURE USE OF HOMOGENEOUS UNITS.

On the whole it would seem that in a greater number of cases it is more easily possible to retain a surplus of present goods for future use, than to hasten a future (unripe, un-

finished, or merely potential) supply, to meet present uses. It would seem that present value is more often, and in the case of more kinds of goods, and in a greater degree, raised by a chance shortage than it is unexpectedly reduced by a chance surplus. For usually the surplus can be kept as is often the case even with direct consumptive goods (such as grain, coal, textiles, carriages, etc.), and still more often the case with indirect durative agents, such as tools, machinery, buildings, stocks of metal, etc.

§ 9. **Physical-change accompanying time-change.** Some goods deteriorate physically by keeping, as fruit rotting in the bins; some remain almost unchanged for a long time, tho costing trouble and expense to store and care for, as cotton, grain, and fireworks. Still others improve physically with time, as newly brewed beer, newly vinted wine, bananas ripening on the stem, celery blanching in the cellar, fattening poultry, half ripe fruit on the tree, the violin seasoning and growing richer in tone.

It is difficult in studying the problem of valuation in such cases to keep clearly distinct the two ideas, that of the physical change that goes on, and that of the pure time-value change. When the object physically improves with time and at the same time increases in value, the physical change seems to account for the increase; but as great an improvement physically may in other cases be accompanied by a fall in value. It is evident that no change in value is to be attributed solely to objective changes in the good, without regard to complex conditions in the desires of men.

In all such cases and in so far as there is any conscious comparison whatever, it is the net desirability (net present value) of the future goods that is compared with the value of the present goods. If half of the apples probably will rot before it will be time to use them, the present value of the future apples, per bushel, must be somewhat more than twice as great as present apples to make a motive for keeping them, and further allowance must be made for trouble, expense, etc.

But, as a part of the present apples are expected to spoil, they represent, and must be compared with, a smaller number of apples in the future. The physical change is an inevitable (or a practical) condition, of the time change. It is, so to speak, a function of time. It happens rarely, perhaps, that it is with respect solely to time, in simple, unadulterated form, that time-choice, time-preference, and time-value are presented to us. Time-value is the present value-difference between the possible uses of a thing or group of things at different times. If therefore the lapse of time is accompanied by increase or decrease of quantity, or by gain or loss in quality, this enters into choice at the present moment.[8]

Undoubtedly, the importance of time in many acts of business life is well understood. "Time is money," is a business maxim. But neither in business nor in the philosophical study of value has the omnipresence of the time element been fully appreciated. This chapter has, perhaps, served to show how time is a factor in practically all economic choice and in practically all valuation. Indeed, time-value and time-preference have aspects that transcend economics; they are universal phenomena of life and conduct.

We have now to see in the next chapter how time-preference is expressed in the values of goods and how in these valuations necessarily a *rate* of preference, a premium for time, comes to be expressed in each person's valuations.

[8] Each of the four types of value is presented in manifold combinations with the other three. Time-preference is interwoven in the choice of things with relation to place, stuff, form. Time-value as a matter of analysis may be deemed to be added (algebraically either as plus or minus) to the other values in determining the sum of value in a good.

NOTE

Present and future goods, uses, desires. We may note the following distinctions to be kept in mind throughout our discussion.

Present goods are any goods actually available for choice at the present moment. These comprise not only goods that may be used directly, as immediately enjoyable, but indirect agents if present. Future goods are any goods that will not be available for choice until some future moment.

All ready durative goods contain either present or future uses, or both kinds. The uses contained in goods must be distinguished from the concrete goods themselves, e.g., the house from its use as a shelter, an ax from its cutting of the wood. (On this relation between the uses and concrete agents see above, chs. 11 and 12.) A future good when it arrives, may contain uses available at various economic periods. It is not unusual to speak of a choice between present goods and future goods when more exactly one should speak of a choice between present and future uses of goods. As any particular concrete good, as a field, a building, a machine, may be yielding indirect uses of many ranks, and of many degrees of futurity, the time differences involved in this process must be expressed in terms of the uses rather than in terms of the agents.

In every case the choice made is, at the moment when made, a present choice. We have no future desires tho we may have a present forecast of a future desire. "Future desires" means desires that will be present at some future time. Present desires are all those desires now being weighed in choice. Present desires may be either desires for present uses or for future uses (either in the same or in different goods). A present desire for future uses is but the anticipation of a future desire, tho the two may be of unequal magnitude. It appears therefore that all time-choices are, in the last analysis, reducible to choices between present desires for psychic-incomes occurring at different time-periods.

CHAPTER 21

RATE OF TIME-PREFERENCE

§ 1. Subjective rate of time-preference. § 2. Time-preference showing in care and repairs. § 3. Time-preference showing in production of indirect agents. § 4. Time-preference rate pervading an economy. § 5. Time-preference and moral weakness. § 6. Beginnings of durative direct goods. § 7. Valuation of durative direct goods. § 8. Relation of technic to time. § 9. Examples of technical and time-differences. § 10. Degrees of roundaboutness ruled by time-preference.

§ 1. **Subjective rate of time-preference.** The fundamental ideas of value (developed in Part I) have application to the rate of time-preference. Wherever there is a good that offers a time-choice to its possessor, there arises valuation as regards time. One may eat the apple now (a typical direct good) or postpone its use, may shift it forward or backward in time. We know little of the absolute magnitudes of the desires that men may have for these things at the two different points of time. We infer only that if a man eats the apple now, his desire for its present use is greater than his *present* desire for its future use. The preference of the present may be due (case 1) to the prospect that apples which are scarce now will be much more plentiful in the future; there we feel almost warranted in saying that the absolute magnitude of the present value is greater than it will be at that future time. We at least feel that we can infer something as to this. But again (case 2) the present use is chosen when the prospect is that apples will be no more plentiful, indeed when it is certain that they will be less plentiful, but when our need and our desire for them will be greater. Again (case 3) when one eats a part and keeps a part of a large crop and the keep-

ing involves no trouble or cost whatever, and no loss from decay, etc., there may be no difference whatever in the *present* values of the different units of the stock. The principle of indifference applies. But in almost every conceivable case the keeping of a good calls for some labor (thought and physical effort) and the use of agents valuable for other purposes (case 4). The present value of a future unit would have to be therefore at least *enough greater* than that of the present unit to make up this additional cost, otherwise it will not be kept. Present value plus estimated cost of keeping equals present value of future unit. There is time-preference for the future, exactly offset by costs. The marginal unit for each period would be in equilibrium with the marginal unit in the other period. (See Figure 32.)

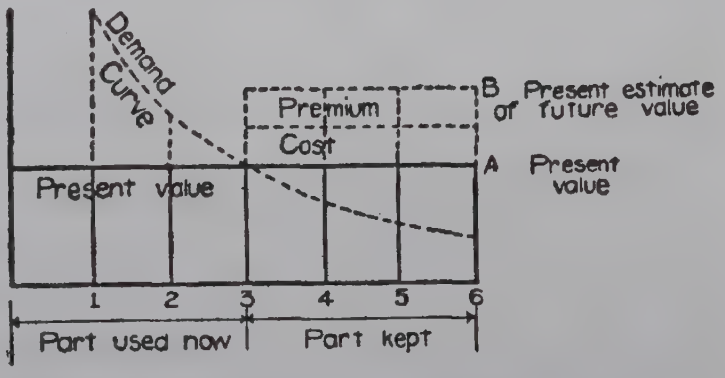


FIG. 32. COMPARISON OF PRESENT AND FUTURE VALUES.

In these cases, however, there is no element of *pure* time-preference, other than that offset by costs, no degree of preference for the present unit simply because it *is* present. The supposition involved is that of equality of value to the results of equal expenditures of labor and to equal amounts of other agents regardless of the time-distance at which various products would appear. Even in a Crusoe economy such a preference must exist. If Crusoe disregarded all time-differences he would take exactly the same thought of the products of fifty years distant as he did of present products and would put just as much of his labor and equipment upon them; that is, he would divide the year's products into fifty (or more) parts, using only a fiftieth. Normally he uses all or nearly all of this year's income, leaving to next year's labor and equipment the task of providing for next year's needs. Practical observation and all the considerations adduced above

(Chapters 3, 10, and 20) regarding man's nature, support the view that present desires will receive on the whole more attention than future desires. If any true time-preference whatever prevails, it must be at *some* rate, in each case, tho the rate may vary with the mood and the conditions in which Crusoe finds himself. One could, by watching different individuals working at their own affairs, form a general opinion, often a pretty accurate one, as to whether their rates of time-preference were high or low. It would show in many ways in their use of their own time and of their stocks of goods, in the qualities of thrift, industry, prudence, etc. But to express any general rate at all exactly would be most difficult so long as we observed only the choice among many objects, without any common standard of value in which to compare them.

§ 2. **Time-preference showing in care and repairs.** If Crusoe's time-preference (for the present) were very high it would show in his use both of his stock of enjoyable goods and of his stock of indirect durative agents. (See Chapter 11, section 11, on the economy of repairs.) When he landed in his canoe he would let it lie on the beach at the risk of its being filled with water or dashed against the rocks, or carried out to sea. This act necessarily implies that at that moment he values his own effort to pull it up more than he values the dimly seen necessity of bailing it out to-morrow, or of repairing the injury done by the rocks, or of making a new one when this is lost. When his house leaks he would do as the proverbial Arkansas farmer (not peculiar to that state), who could n't mend his roof when there was rain and saw no need to mend it when there was n't. Crusoe's use and management of his garden, of his fowls, and of his goats, their feeding, breeding and care, all would *involve* and express a certain comparison between present and future vegetables, grain, eggs, milk, cheese, goat meat and skins, his own labor, etc. In every economy, whether in Crusoe's or in a larger community, the practice of each individual as to repairs and the efforts made by him to offset depreciation, inevitably embody

that individual's rate of time-preference in a thousand ways, tho it varies more or less with his mood, health, fatigue, etc., and tho he is quite unconscious of any arithmetic expression of it.

A rate would show itself among other ways, in the need of more labor and more materials later, than would suffice now. A handful of earth may stop a hole in a dyke, whereas a trainload would be insufficient later. Whenever it is true that a stitch in time (now) saves nine (next year) and the stitch is not taken, then the neglect *involves* a rate of 800 per cent in terms of present stitches (one now, increment next year eight). If one day's labor now on the canoe is found by experience to save two days' labor a year later and it is not taken, then the rate is over 100 per cent a year (one now, two next year; increment one, or 100 per cent of quantity). Plainly, however, two greatly diverse rates if recognized, could not long continue to exist side by side. For if the rate were even 99 per cent, not only would the canoe be mended but the stitch would be taken in time wherever it would save two or more stitches next year. And so, it would be if there were a thousand different kinds of repairs to be done. There would not be a thousand different actual rates of physical increments; for so far as there is any normal habit or consistency in the individual's conduct these different rates of increments will be brought more or less into conformity with a prevailing *rate* of time-preference. Whatever that rate be, there is good reason to make the possible repairs that involve a greater rate. But those re-

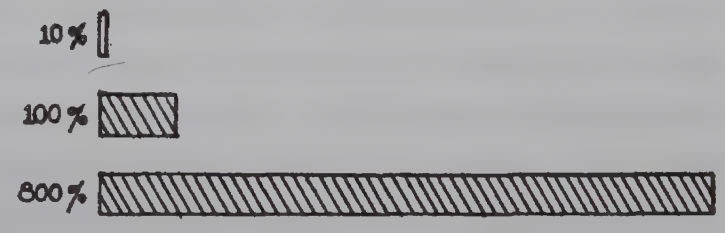


FIG. 33. TIME-PREFERENCE AND REPAIRS.*

* The bars of different length represent repairs involving different rates of time-preference. If the rate is nine per cent, all the kinds of repairs here shown would be made. The same illustration applies to the choice of indirect processes, discussed in sec. 3.

pairs, the neglect of which involve a smaller increment, ought not to be made. The rate of time-preference, like an isothermal line, marks off the repairs that hypothetically *would* involve a greater increment (and which now are made) from those which involve a less rate (which now are left undone).

Repair is nothing but a particular case of production presenting the peculiar problems of complementary agents. Even where time-preference is very great, repairs will be promptly made when the whole agent with all its usance-value may be put back into running order by replacing a single part (as by mending a hole in a canoe, putting a new string on a bow, etc.). It is the anticipatory repairs, the ounce of prevention that is most likely to be neglected in an improvident economy. When many repairs are needed, the repair becomes as difficult as the making of a new agent, or more difficult, and presents practically the case of new production.

§ 3. **Time-preference showing in production of indirect agents.** A rate of time-preference is reflected in the physical increment of goods in many cases. Suppose one hundred days of labor this year will produce one thousand fish, caught by wading the streams or will make a canoe which will enable one hundred days of labor next year to yield 1100 fish; and suppose that one day's labor will obtain one thousand apples in the wild forest, and will plant a tree that will yield 1100 apples next year; then the choice of the relatively indirect method results in a physical excess of products at the rate of 10 per cent. But the direct method is chosen and will continue only when the rate of time-preference is over 10 per cent, and is abandoned as soon as the rate of time-preference is less than 10 per cent. Whenever a Crusoe "gets ahead far enough" in his equipment to have a canoe, he no longer gets his fish by wading the streams (except at unusually favorable moments), and when he has got to the point of having an orchard he no longer plans to gather fruits in the forest (tho he will pick the few that are easiest to get). He

continues this choice among all the possible present and future uses of his present labor and resources, till he has included all the time-consuming methods, whether direct or indirect, that involve increments *as great* as his rate of time-preference. That rate, however it may fluctuate, *dominates* the choice of technical processes. A man's prevailing attitude of mind and habit of choice between present and future, in the use he makes of his present economic agents (labor and goods) marks, so to speak, an isothermal line between those savings which he makes (all tending to the same rate by the marginal law) and those which he fails to make (the excluded choices). Time-preference (a purely psychological fact) involves a rate of discount or of premium which thus would show itself here and there in a certain quantitative surplus or increment each year over the yield possible by the alternative methods. When, however, a better technical method is in use, and is warranted by the rate of time-preference, it is possible only at a loss to go back to the older method. For lack of a saving that involves but 5 per cent discount on next year's goods, one might reduce production to an amount involving 100 per cent discount. Evidently this would be a maladjusted economy, and would call for a new adjustment of agents for present and future uses.

§ 4. **Time-preference rate pervading an economy.** The mere physical increments that result from any process or method of production are not necessarily value increments of the same magnitude. Indeed, we have no absolute standard by which to measure the magnitude of a person's valuations in two different periods, any more than we have to measure the magnitude of values in the minds of two different persons at the same time. If one values 100 present fruit now as much as he values 110 next year, we can not say that the 110 when they come will have a value 10 per cent greater than they have now. This year there may be an unusually small crop, next year there may be reason to expect an unusually large crop. Under the conditions one hundred

present fruit may have a present worth of two hundred future fruit at the same time that many other choices indicate a time-preference rate of not over 10 per cent. Again we must confess that we have no absolute standard of values that can be carried over from one time period to another.

However, when we stand outside of an individual economy, overlooking the seasonal variations within the years and the changes in productive methods due to science and invention, and we see how on the average, year after year, choice is made, we can form some judgment of the person's prevailing or pervading rate of time-preference. Such a rate each individual has; and these rates of individuals unite into a time-price when two or more persons trade present for future possession of goods. Just as the subjective, individual choices between any two commodities (Chapter 7, sections 3-7) enter into a market-price of objective goods, so the rates of time-preferences of individuals trading in a market are adjusted to each other and result in a market-rate of time-preference.

§ 5. **Time-preference and moral weakness.** Economics touches frequently upon the borders of ethics, and it is well to observe here that abstinence is but an aspect of choice and will-power which has effects in the realm of moral as well as of economic values. If there were to be formulated an economics of personal conduct, it surely would give a large place to the comparison between present and future enjoyments.

The problems of abstinence and time-value appear in prodigality, in much heedless pleasure, and in many forms of vice. Prudence, always included among the virtues, is the faculty of recognizing not only future costs and dangers to be avoided, but the greater future joys that may be gained at the price of present sacrifice. It is not without reason that in the discipline of youth in civil and military life, the cultivation of thrift, order, and promptness are in every land deemed to be fitting means, when wisely employed, of developing moral virtues. Shiftlessness in the performance of tasks for one's

own good is almost certain to show itself in failure to fulfil agreements with others, resulting in excuses, falsehood, and degeneration of character.

Time-value is involved in prodigality. Often the estimate of the present good is unduly high, viewed in the light of wider experience. Goods that meet momentary desires make an exaggerated appeal to untrained minds. The child, the spendthrift, the savage, can not properly estimate the relative values of present and future. The drinker exchanges the hopes of a worthy life for the exhilaration of the spree. The reckless, underestimating the future penalties of disease, insanity, and death, barter health and happiness to gratify the moment's impulse. Indulgence in social pleasures, if secured at the price of lost sleep, weakened health, and debauched character, are loans from the future made by youthful prodigals at usurious cost. If no one ever paid more than a moderate premium for the gratification of his present whims and impulses, most hospitals, drug-stores, and medical colleges would close, and half, if not all, the prisons would be empty.

§ 6. **Beginnings of durative direct goods.** The illustrations of time-value thus far have been of consumptive direct use of goods. (See the analysis in Chapter 11, section 1.) These are the nearest to psychic income, and in this class of cases time-value appears in its simplest form. Historically viewed, likewise, this is the starting point of time-value. The animals (with few exceptions) live only in the realm of value that contains present, direct, consumptive uses. The savage's range of vision and choice is wider, but still is limited mainly to direct present uses gained with such aid as his simple tools and weapons afford. He leads necessarily "a hand to mouth" existence. He has no surplus stock except by lucky chance. Lack of success for a few days in the everlasting search for food means hunger, then famine, and the diseases which always follow in its train. The increase of wealth in early times, therefore, took largely the form of larger stocks of di-

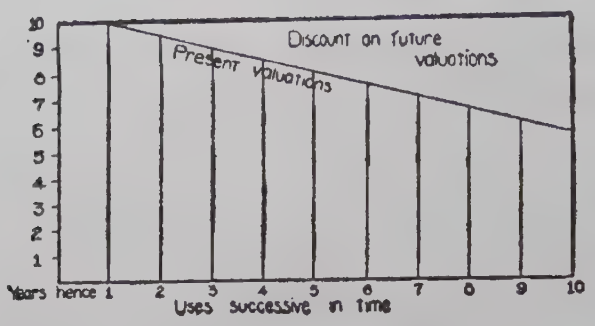


FIG. 34. DISCOUNT OF FUTURE USES IN A SERIES.

rect goods. Some of these were of a kind that could be kept, such as stores of vegetable food, flocks and herds of animals kept to be eaten, hoards of precious ornaments, more and better clothing and shelter, weapons of the chase, horses, dogs, etc., which were valued also as direct agents in sport, not merely as means of getting food.

§ 7. **Valuation of durative direct goods.** Let us now extend our study of time-value to more durative direct goods. (See numerous illustrations, Chapter 11, sections 2 and 3.) Take a dwelling as an example. Literally every moment's use of a house is a separate use, but for convenience these infinitesimal uses are grouped into conventional units, as one day's or month's or year's use, evaluated all at one date. The uses of a house for the next ten years may be practically the same in a physical sense but they are distributed in time. But it is not a stock of present, non-perishable *goods* which may be all treated as present uses or all as future uses subject to the leveling influence of time-preference. Each use is *fixed* in time and must be valued there or not at all. (See Figure 34.) If every future use were valued now without discount, the present values of the units would be represented by the top line. If this occurred in the case of a durable house that should last a hundred years, the total present value of future uses would be one hundred times this year's use. A piece of real-estate kept up under the renting contract has an indefinite series of uses, which if not discounted would have an incredibly large present value, a thousand times, or an infinite number of times, the value of the annual use. But if the future uses (as usually happens) are discounted in the present, this might be represented by the descending line. Such regularity results, however, only in a market where the great variety of individual differences of conditions have been

combined into a market-rate of time-preference. A (Figure 35) has a growing family and the uses of the house will steadily increase for the next six years, and then, as his children leave home, will decline. B is expecting to be away for a time, and the house will first yield uses of smaller, then of larger, value. If each of these persons or families were in a Crusoe economy such differences would affect the amount of labor and materials put upon a house, the year in which it would be built or improved, etc. But in a market for house uses many other adjustments are possible, through moving out and moving in, buying and selling, sub-letting, etc., by which these differences of individuals' circumstances largely disappear, and only the general and persistent discount, reflecting a market-rate of time-preference, remains. A diamond necklace is a good example of an absolutely durative series of uses. If each year the value of the use is expected to mature as one hundred dollars, the necklace would have an infinite value if the future uses were not discounted.

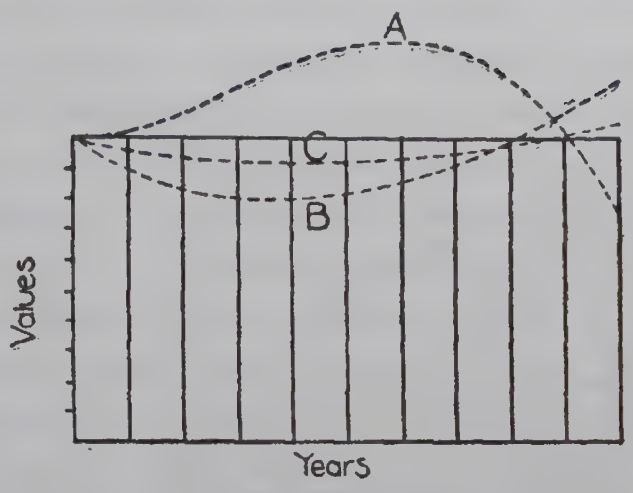


FIG. 35. VARIOUS INDIVIDUAL VALUATIONS OF FUTURE USES.

§ 8. **Relation of technic to time.** Directness of use (technical) and timeliness are not the same. (See Chapter 10.) Of the thousands of forms of matter in the world, only a comparatively few ever will make an immediate impression on man's senses. But many of them are in his life so connected with uses by instinct, association, and reasoning that he attaches an importance to them. In most cases it would require close thought to see that the service attributed directly to them is but a reflection of that performed by some other thing. To include indirect uses in choice, calls for something the same kind of wider vision that is needed to include future

uses. Indirectness and futurity may be, and often are, united in a single concrete good. Indeed, these two qualities of goods are very commonly confused in thought, whereas their gradations are in different planes of thought; they are, so to speak, at right angles with each other but having a single point in common. This may be graphically represented as in Figure 36.

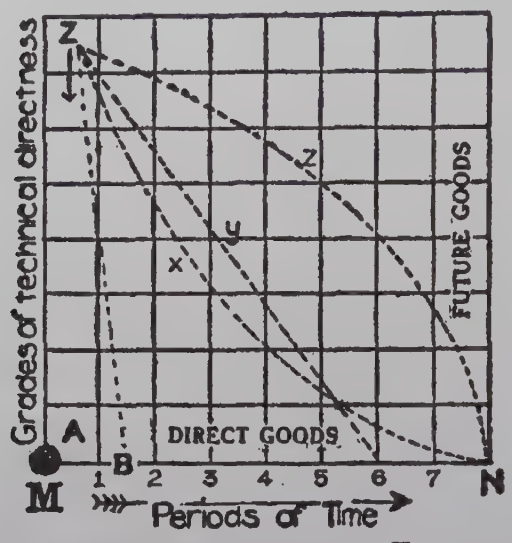


FIG. 36. RELATION OF TECHNIC TO TIME.*

§ 9. **Examples of technical and time differences.** Mere technical indirectness *per se* has nothing to do with time-value. If a technical process involving a half-dozen or more steps is completed within an instant, then the most indirect agent must have all the value reflected to it from the product, subject to no discount on account of the lapse of time. The man can get the nuts by climbing the tree, or by taking a stick and knocking the nuts to the ground. The difference in the time of the two processes is negligible, the indirect method

* The block A represents the comparatively small area of direct present goods. The economic subject, M, enjoys these direct uses of goods at each present moment. The rectangle A-Z represents all present goods, ranging from most to least direct. Their technical uses are being transmitted along the line from Z to A, while M and all his possessions are being carried along from M to N by the stream of time. The indirect uses of goods thus are like swimmers moving toward an opposite shore and being carried along by the time-stream. They move across at different angles, for while time moves at the same rate for all, the swimmers move forward at very different rates. Some uses that are very indirect technically, are causing psychic income almost at once (line Z-B); other uses but slightly indirect, the slow swimmers, are not to attain the shore of direct use for a long time as they move through the successive technical stages. The course they describe would be represented by the straight line Z y 6; or if the early indirect steps are faster or slower than the later ones, the agents describe courses represented by Z x N and Z z N.

securing the product as soon as the direct method. Hence there is no choice between the two as to the time-remoteness of the product, but only as to the amount of the product per unit of labor (or ease of labor to get the same product). If sticks are free goods, the whole amount of the additional product is attributed to the labor; if sticks are scarce, a part of the product must be attributed to the usance of the stick. But that is a usance-problem, not a time-value-problem. But if the same amount of labor will plant another tree which will yield a much larger and better crop annually after twenty years, then time is an element. Or again: the coal heats the iron tubes, the tubes heat the water, the steam moves the piston rod, the piston rod turns the wheel, the wheel a belt, the belt turns a dynamo, the dynamo generates electricity, the electricity is carried through a wire to a filament in a glass bulb, and you are enjoying artificial daylight in your home. The coal is the first link in a chain of indirect uses the last link of which is *at the same instant* yielding a direct use. Whatever part of the value of the use is imputable to the coal on value-principles, as one of the various complementary agents, is, so to speak, payable on the instant. When, however, the roundaboutness of the process is necessarily time-consuming, then time-preference operates. For an interval of time divides the indirect use of the agent and the final psychic income from which its value must be reflected. If the coal has been mined for some time, time-value is involved in the relation between the worth of the coal when it was mined and its worth when it is turned into illumination. Various possible ultimate uses, at various degrees of distance in time from the present, some a year, some five years, some twenty years, may compete for some indirect agents. The various products are located at different points in the line of time, and because of *this* difference (besides other differences) appeal with varying degrees of force to desires. If this were not so time-preference would have a zero magnitude.[1]

[1] This distinction between timeliness and roundaboutness must be kept

§ 10. **Degrees of roundaboutness ruled by time-preference.** Nearly the whole of the great mass of indirect goods applied to making stuff-, form-, and time-changes require more or less the lapse of time to yield their uses. True, the indirect uses as well as the direct uses of goods (see Chapters 9 and 10) may be more or less hastened or delayed, but that is a time-change that involves the sacrifice of other agents. There is in each economy a certain normal time-point, a point of maximum economy for a product to appear. Rush orders are always costly. If a horse is worked beyond a certain point, the present use shortens the horse's working life. If, to save another trip, a wagon is too heavily loaded it is strained or broken. If a machine is geared to run beyond a certain speed, it does poorer work or goes to pieces. A sudden rise in the value of the product may warrant the sacrifice of agents. To warn the inhabitants of the valley that the dam has broken, the rider may ride his horse to death. To keep from freezing, a man will use mahogany furniture as firewood. A war vessel going into action throws overboard the piano and other cabin fittings. The outbreak of war sets all the armories to working overtime.

What is the psychological change that happens in these cases? The present use suddenly becomes so much more valuable than the future use, is so much *preferred,* that the mode of use, or intensity of use, is altered. Time-preference dominates the technical processes. And this is so in normal as in abnormal times. The normal time-point, the point of maximum economy, at any period, is one where the uses of indirect agents are distributed along the path of time in accord with an existing rate of time-preference. If next year's uses are now valued just as much as this year's uses, there would be one choice of roundabout processes, if they are valued one tenth less, there will be a very different applica-

clearly in mind, for confusion at this point betrays one into a false notion of the nature of interest.

tion of indirect agents. There is thus a relation between roundaboutness and time-preference, but it is one in which the mere mechanical method is passive and subordinate to human choice, time-preference.

CHAPTER 22

MONEY AND CAPITALIZATION

§ 1. The functions of money. § 2. The standard of deferred payments. § 3. Property. § 4. Wealth and property rights. § 5. Origin of capital; its definition. § 6. Capitalization of direct durative agents. § 7. Capitalization of indirect durative agents. § 8. Time-price without loans. § 9. Present price and the discount on future uses.

§ 1. **The functions of money.** As trade among a number of traders is greatly facilitated and price is given a more exact expression when a common objective standard, money, comes into use, so a price paid for time-transfers of many kinds can be much better expressed in a common standard by the use of money.

Money is first a means of trade, a medium of exchange. (For preliminary definition, see above, Chapter 7.) It is some object which has value to all men and which, because of its convenience, comes to have the most general *marketability* of any good. It is thus selected because of certain qualities in which it excels any other good. It is always some object containing, in the view of every one, a good deal of value in small bulk, most easily kept without physical decay, and that has come, as markets develop, to be one of the goods in most trades.

The general medium of exchange is necessarily the most general price-good. As all other things are constantly exchanged for money, they can each in turn be compared with all the others in terms of money. It becomes the *common denominator of prices.* The price of any one thing in terms of another can be found from the money-prices of the two.

This permits and cultivates habits of exacter conscious calculation of prices both by buyers and sellers than were before possible.

Whenever money is kept for an hour or a day, awaiting the fitting moment to complete the double exchange, it is serving the purpose of a *storehouse of saving*. Because of the same qualities that make it generally exchangeable (certainty of sale and physical durability) it is one of the best objects to keep for longer periods (to be saved, hoarded) against a day of need. It is a generalized means of abstinence, kept for a general purpose without choice as yet of the particular good for which it will be spent. The use of money as a storehouse of saving was more common formerly than it is now, for in advanced countries better ways than the hoarding of money are found for "laying up for a rainy day." In some measure, however, even here money serves this use and in large parts of the world as in Egypt, China, India, this use is of very great importance. A thing ceases to be money, logically viewed, the moment its owner keeps it without the purpose that it shall be spent ultimately. The typical miser is a man who has lost his reason as regards the money use, has forgotten that it is a means to an end. Whether serving as a storehouse of saving or as a medium of exchange, in either case money is to be kept only till the moment when the owner believes it will best gratify his desires. Its use thus even as a medium of exchange involves a recognition, and a more or less conscious calculation, of time-value.

§ 2. **The standard of deferred payments.** But this connection with time-value is yet more important as money comes to be used more and more as *a standard of deferred payments*, a standard for prices over a period of time. A *deferred payment* is a payment made in fulfilment of a bargain made for goods delivered at an earlier date. It is the completion of a credit transaction. *Credit* means, first, trust or confidence reposed by a seller in a buyer, and hence the selling of things "on trust," in exchange for a promise of pay at a later date.

Now as money is the common price denominator, and the price of nearly all things whether they are sold for cash or on credit is expressed in money, it is the unit in which the comparison of goods is made when one chooses goods in different periods of time. It is not an absolute standard of value; a "dollar" is not necessarily of the same value-magnitude to any one person from year to year, much less to all persons together. Money is subject to fluctuations of its own (for example, those due to changes in gold production) having remarkable consequences in industry which must be separately studied. But money is taken as the objective standard in borrowing and lending to which the time-preferences of men are adjusted, as value is adjusted to price. This is to be treated under the subject of interest.

§ 3. **Property.** No trade of goods is possible unless the trader has possession of the goods, or can deliver that control over to the other party in the trade. The fact of possession is implied in all discussions of value, price, use, and rent. Possession is a legal fact. It is legal control, not physical hold of goods. In any settled community it must be regulated by law, the law of property. *Property* is ownership. It is an intangible right; only by a loose figure of speech has it come to be applied to the object owned (e.g., a man has a property *in* a house and lot—real estate; hence the house and lot are called his property). The law of property is the rule of the community determining control over economic goods. Economic goods are valuable; other persons would like to have them. A property right is either a claim upon some one else or a limitation of some one else's claim. You say in various ways, this house with land is *mine*, it is my own, it is owned by me, it is my property, I have a property right in it, it belongs to me, etc. All these phrases express your right to have and use as against other men's rights. But you may sell to another man a right to a method of use or to a limited period of use, in a written instrument, a lease. He then has a legal right in his leasehold, and your right is limited by his.

He may have an "equity" in the house (a claim upon the income from the house which formerly was enforceable in a court of equity). At the same time you may get repairs made by mechanics who until paid have a legal claim for which the house itself is legal security (law of mechanics' lien). And so there may be a score of overlapping and mutually limiting claims upon the income from one economic agent. There is a legal distinction between your legal claim to the *fee simple* of a landed estate, and the various legal claims upon *you,* or equitable interests in the house (when it is the security). But it is property rights that are traded rather than the things themselves, for legally each party in a trade can deliver the possession and use only of that limited part, aspect, or mode of use, of goods, which is his.

§ 4. **Wealth and property rights.** The valuable objects themselves, such as lands, houses, cattle, implements, and ships, are wealth. If there are no overlapping legal rights, the property right to a piece of wealth has the value of the wealth itself. In simple conditions of industry each piece of wealth had one owner who had the right to all the income of that wealth; or if others had overlapping claims (of landlord, sovereign, etc.), they were of a fixed sort, not objects of sale. Neither the objects of wealth (the lands, etc.) nor outsiders' claims upon them were ordinarily bought and sold. Therefore their magnitude was usually estimated in terms of their rents, or incomes, and not in terms of their price if sold as a whole. In England, where land rarely changes hands except by inheritance, an income whether from land or other sources is still spoken of as worth so many pounds a year, rather than as worth so much as a whole. As there comes to be a network of property rights extending over the wealth, and mutually delimiting each other, it is evident that the total price of these rights can not exceed the total price of the uses (products) of the wealth. The different pieces of wealth have yields that are impersonal—the field yields its crop, the house its services, the ship its uses, and these impersonal yields are

apportioned to different persons as incomes according to their property rights. Two or more men may be partners, one entitled to ½, another to ⅓ and another to ⅙ of the total usance; or before these incomes are apportioned, many other small prior claims may be first deducted. Corporate ownership with small shares of stock gives a much greater division of claims upon income.

More and more it is these claims to income that have come to be the objects of trade among men, rather than the concrete wealth itself. One may be a very rich man to-day and not own outright, in fee simple, any but small personal belongings. He does not own wealth in the old-fashioned way, he has *capital,* and is a capitalist.

§ 5. **Origin of capital; its definition.** Capital is from the Latin adjective *capitalis* (from *caput,* head) in the phrase *capitalis pars,* the chief part, principal part; hence *principal,* of a money-loan. The capital, or principal, of the lender was this amount of money, distinct from the usury (originally meaning the sum paid for the use) or interest, the amount in addition which was due him at the expiration of the loan. Money loans of this kind were rare except among merchants in cities, and the borrower on his part looked upon *the capital* as the amount he had to "invest" (literally, clothe) in various kinds of goods. Taking these goods to a distant market, or changing them by manufacture into more valuable forms, he expected to regain when he sold them not only his capital but more than enough to pay the interest.

Merchants, manufacturers, bankers, were constantly thus investing capital. They came to estimate in terms of capital not only the sums borrowed and lent but the value of all their own rights in the goods. Even now the capital-mode of expression is less common in the rural economy, tho it is increasingly used by farmers of the enterprising sort, who are borrowing and making improvements, getting better equipment, etc., in many cases in America going so far as to count also the original price of the land, or its present value, as a

part of their capital. We may define capital in accordance with this modern view.

Capital is a person's investment power as expressed in terms of money, being a person's property rights to income, estimated, as to amount, with reference to market conditions. These property rights may be composed in part of claims upon income arising from the labor of others; a promissory note given by a student of good credit, or by an inventor hoping to continue his experiments, is capital in so far as it is saleable, or bankable, tho the income from which it will be paid is to come from personal resources and not from any material agents.

Business- or *industrial-capital* is more specifically that part of a man's capital which is invested in his business, from which to draw a monetary income. The value of his house, furniture, and personal belongings is capital, tho ordinarily not thought of as such, but as means of enjoyment. In an emergency they may be converted into money to be used in his business, and being part of the property available to pay his debts, they help to give him greater credit at all times. *Nominal capital* is the amount of shares of stock issued by a corporation, taken at their par, or nominal, amount. It may have little relation to the true investment. Where there is no regulation of stock issues, a company with no true capital may print shares of millions of dollars of nominal capital. In financial statistics, bonds as well as stocks are often included in the nominal capital (as in the reports on capital in American railroads).

§ 6. **Capitalization of direct durative agents.** Capital can either be pledged, or sold outright at a price.[1] *Capitalization* is the process of calculating the market-price of saleable incomes (whether sold now or not). It is the estimation of the present worth of marketable incomes. This gives us another way of defining capital: capital is any right to prospective income that can be capitalized.

[1] The value of a slave may be capital. A man, in our times, may

Some expression of the present worth of future uses is involved in the choice made by the individual between any two uses that are not of the same time-period. It is easy to see that this is so in every case where a present stock of goods is kept for use in different periods; it is so in every case of repair of agents for future use; it is so in every case where goods are produced for the future.

Many of these choices involve the choice of an object containing a number of uses of different time-periods, which are summed up—capitalized. Take a direct durative good, such as a fan, a house, a pleasure boat, an article of clothing, etc. That on which the value of the good as a whole is based is a series of uses which can not all be present. The fan represents all the cooling drafts to be got from it not only to-day, but many days to come. Additional uses may be obtained from the house by crowding more people into it, possibly thus slightly increasing the wear, but in no way can next year's shelter be obtained until next year. Each durative agent yields its uses through a period of time, a period usually not to be shortened except at a cost. The maximum economy of utilization (see Chapter 13) gives a series of uses at different times and of unequal present values. Each succeeding year's use, until the agent is expected to wear out, is adjusted to the value of this year's; that is, it is reduced to its present worth, and the sum of the present worths is the present value of the agent. Representing the total value of the series as P and the annual incomes as a' for the first year, etc., and the life of the agent as four years, we have:

P = present worth of $(a' + a'' + a''' + a'''')$ and substituting an assumed present worth of a,

$$P = (10 + 9 + 8 + 7) = 34$$

not legally sell himself into slavery. Therefore, free men, in any full sense, are not capital, and it is misleading to speak of them as such, or to estimate their capital value as is sometimes done. But to a limited extent, carefully guarded by law, a man may borrow and pledge his future earning power, and thus capitalize it.

§ 7. **Capitalization of indirect durative agents.** This process of valuing direct uses is extended to those indirect agents whose uses are more or less removed in time. Desires are so expansible that if the right kind and quality of direct goods could be had at will, enormously greater amounts would be used. But the continued income of present goods is dependent on durative agents. The psychic income of a civilized community is conditioned on a favorable and extremely refined environment: houses, libraries, theaters, the agencies of travel, as well as the sources supplying the more material needs. These agents, even in the richest community, are limited in variety, in quality, and in number. The present price of these goods is the capitalization of the expected uses they contain.

If a limited supply of agents could and did produce at any moment unlimited products, they would become free goods. The yield of the uses of most things depends, however, upon the lapse of time: an acre of land with the most perfect cultivation can not feed the world; but remove the limit of time, wait an eternity, and the acre would yield an infinite crop. Moreover, the economic return of agents in a given period is reached sooner than is the maximum physical return. If agents are forced to yield more bountifully, it is at the cost of other goods. A point of maximum net yield is found in any given period dependent on the rate of time-preference (see above, Chapter 21, section 10). Here also the lapse of time is the condition of the increase of the values derivable from limited agents.

§ 8. **Time-price without loans.** It is clear then that discounts of future uses are necessarily involved in an individual's valuations of all his own goods which have any durativeness whatever—*necessarily* whether the person is conscious of it or not. The expression of this discount on the future (or premium on the present) may be and often is inexact and variable, but the fact of the discount (or premium) is always there. If this were not so and present uses in technical proc-

esses were not on the whole treated as more important than future uses, labor and resources of all kinds would be distributed impartially over the most distant periods of time. In the extreme case one might starve himself to death in youth while producing goods for his old age.

Now if these discounts are involved in valuations, they must play their part in determining the *prices* at which trades of objects containing different time-periods are made. Time-value bears the same relation to time-price that value of direct commodities does to their price. (See Chapter 7.) Generically the time-price problem is the same as the problem of commodity-price, and of usance-price (rent); specifically it is different only in as much as the particular value is that due to time. Collectively the valuations are the basis of price, but severally the valuations are socialized and modified by price. That is, the existence of the market gives new conditions of substitution of goods in point of time, and presents new motives and possibilities of using wealth.

Let us see how an arithmetic rate is involved in such trades, when the prices are expressed in money-terms. Trader *A* has a steer ready to market that will sell now for $100; he trades it to *B* for five calves that will sell for $102 each in three years, meantime costing to keep, including allowance for labor and trouble, $25 a year each (counted at the end of each year). *A* gives $100 now, plus $125 a year hence, plus $125 two years hence, plus $125 three years hence, total $475, to get a capital of $510 at the end of three years.[2] In this trade there is involved a premium on the investment at the rate of 5 per cent. Do the two parties need to know this when they trade? Not exactly as an arithmetic expression, but approximately as to the outcome.

[2] Of course there are other reasons why the trade may be made, such as the better means that *A* has for feeding calves, the special use *B* has for fat steers, etc. Attention is limited here to the time-price problem, in cases where the prices and costs are the same to both parties.

§ 9. **Present price and the discount on future uses.** Every exchange of a durable agent involves an estimate, rough and imperfect it may be, of that agent's future. The practical traders, who in agreeing upon a price are thus involving a rate of capitalization of goods, are usually only dimly conscious of the logical nature of the process. In merely occasional trades the process usually goes on in a very empirical way, by the method of trial and error. The future changes are only roughly, not accurately, estimated. What each tries to do is to get as much as he can and give as little as he must, and, comparing one line of trades with another, shifts back and forth to the line that gives the best results. But the shrewd bargainer is the one who foresees more clearly than his fellows the complex changes to come or shows an intuitive sense of the net result that the common mind lacks. The ability and the inability to foresee such changes make men rich and poor. In all this bidding for capital the logical basis of the present value is the series of expected incomes. When the agent is bought outright, the very concluding of the bargain fixes a relation between the expected value of the income and the value of the capital invested. This discount on the future incomes (which is *involved* in the lower present price) *evolves,* as the agent is kept and yields the expected income, as a rate of premium on the purchase price, that is, as a rate per cent on the amount of invested capital.

There are, of course, different markets for time as for other things at the same moment and near each other. In these the time-rate varies, being high in poor economies and low in good ones. Temporarily, as in time of war, or a panic, the rate may become very high, as shown by the abrupt fall of prices in commercial centers, when prices throughout the country are but slightly affected. The communication between the different markets for investments is imperfect, and the adjustment between them of the rates of discount on future incomes is always more or less incomplete.

In the next chapter we shall see how the various kinds of

monetary incomes are capitalized in the business world, how thus continuously a price on investments, or rate of return, prevails, and expresses a ratio of exchange between present and future capital (and incomes) in the market.

CHAPTER 23

CAPITALIZATION OF MONETARY INCOMES

§ 1. Buying with money. § 2. Capitalization of agricultural land-incomes. § 3. Years' purchase and rate of income on capital. § 4. Price and rate of income. § 5. Bonds and mortgages as saleable incomes. § 6. Price of variable terminable incomes. § 7. Depreciation funds. § 8. Corporate securities. § 9. Capital value of public franchises. § 10. Incomes sold in perpetuity. § 11. Bonds with fixed maturity.

§ 1. **Buying with money.** Where money is used the usual case is that of the sale of one good for money, which is then spent for another good. In all these trades time-preference is only one factor helping to fix the price, but the important thing to note is that it always is a factor and is logically and practically a matter for separate consideration. Wherever, to-day, there is a business income that has a market-value, that may be bought and sold, it may be capitalized. Men compete in the purchase of income-yielding agents. There is a continual contest in judgment among investors to secure the largest return for the smallest outlay. On the other hand, the owners of any income strive to secure the largest capitalization for it that they can. Buying as cheaply as they can the present goods they need, and selling as dearly as they can the future goods they offer, each man fits his valuation to the market. In any market the individual finds an established price (Chapter 7, section 6) and all he can do is to buy or to refuse to buy, sell or refuse to sell, at that price. A trader's valuation may be such that he is an included buyer at one price, and at another price he ceases to buy and begins to sell.

§ 2. **Capitalization of agricultural land-incomes.** An in-

teresting example and one of great historical importance, showing the capitalization of a series of incomes looked upon as perpetual and uniform, is agricultural land of western Europe since the latter part of the Middle Ages when money had come into more general use. Suppose the annual net income is $1000 (after deducting from rents all repairs, taxes, and other costs) and every one believes that it will continue at that amount indefinitely. The ownership of the estate represents the right to this annuity, and whatever price is paid for the ownership is the price of the whole series of incomes. As the series of incomes is looked upon as perpetual, if the future rents were to be counted as if they were already present, with no discount on their future value, the capital sum would be infinite. On the other hand, if the ownership is worth nothing just after a rent-payment when no more rents are due for a year, the discount on the future rents would be 100 per cent. Evidently either extreme is impossible, and as a fact of observation, just such purchases are made every day at a finite price bearing a pretty regular relation to the amount of the annual income. The practice is plainly indicated by the phrase in which the price for land is spoken of still in England and the continental countries—a phrase unfamiliar to American ears—as a certain number of "years' purchase." If an estate is sold for twenty or thirty times the annual net rental, it is said to be sold at twenty or thirty "years' purchase," as the case may be. This does not mean that the rental for twenty years only is sold, but that the rental in *perpetuity* is sold for twenty times the annual rent; that is, the land is sold outright for the amount of twenty years' rent paid at once. The estate is looked upon primarily as providing a fixed income; the value of the permanent possession of the estate is thought of as a certain number of times the value of the income secured. "Years' purchase" means, therefore, the length of time required for the incomes to amount to the purchasing price.

§ 3. **Years' purchase and rate of income on capital.** Now

at ten years' purchase every piece of property yields 10 per cent on the capital invested (purchase price $10,000, annual income $1000); at twelve years' purchase 8⅓ per cent; at twenty years' purchase 5 per cent; at twenty-five years' purchase 4 per cent, etc. Increase in the number of years' purchase involves a reciprocal decrease in the rate of return which the original investment of capital will yield; that is, one divided by the years gives always the rate per cent of income, .10, .083, .05, .04, etc. The arithmetic process is the simple one of aliquot parts. The number of years' purchase expresses a *ratio of capitalization*, thus: a : P :: 1 : 10, ten years' purchase being a low ratio and 40 years' purchase a high ratio. Corresponding with this is a rate of annual premium at which the price a year distant will appear in comparison with present price, the difference being a net income; thus, present principal is to future principal plus a year's income as 100 is to 105, the rate being .05.[1]

Whatever the rate is, it is an arithmetical fact, entirely independent of any calculation by purchaser or lender, but necessarily resulting whenever the property changes hands at

[1] The rate of premium is reckoned on the basis of present worth as 100. This rate is ordinarily used to discount the future by dividing the future income by the rate plus 1. $P = \frac{1}{1+r} = \frac{1.00}{1.05}$. To express the true rate of discount on the future, however, the future value must be taken as a basis of 100; discount is proportional to premium, as present worth is to future worth; thus p : f :: 100 : 105 :: 95.238 : 100 :: 4.762 (the rate per cent of discount) : 5 (the rate per cent of premium). As a matter of convenience in business practice, the rate of premium (which becomes an interest rate) is generally employed in all banking, insurance, annuity, forestry, and other problems, and when used as a divisor, in the manner just explained, is for convenience spoken of as the rate at which the sums are "discounted"; e.g., in the next paragraph of the text. In the well-known method of bank discount, however, the premium (interest) rate is used as a multiplier, the interest being simply taken out in advance and the borrower receiving a smaller sum than that nominated in the note. This is equivalent to charging him interest at a somewhat higher rate, as interest ordinarily is payable at the end of the year. See ch. 25, note 2.

any price. Another arithmetical fact is that this rate of yield is that at which the annual income of a perpetual uniform series must be compound-discounted to produce the capital sum; that is, a perpetual series of $1000 discounted at 10 per cent gives a present worth of $10,000, or ten years' purchase; a perpetual series of $1000 discounted at 5 per cent gives a present worth of $20,000, or 20 years' purchase. The rate at which a perpetual series is compound-discounted to purchase a capital sum is always the rate of simple interest the investment will yield, and *vice versa*. The present income is worth most, next year's less, and so on in a decreasing series. Whatever the rate prevailing, incomes infinitely distant became infinitesimally small when compound-discounted. The formula is $P = \frac{a}{r}$ when P is the present worth of all the incomes, a is the perpetual annuity, and r the rate per cent; e.g., $20{,}000 = \frac{1000}{.05}$; this is equivalent to $r = \frac{a}{P}$; that is, the rate at which the future incomes are capitalized is the annuity divided by the capital sum; e.g., $.05 = \frac{1000}{20{,}000}$.

§ 4. **Price and rate of income.** It may be shown by a price diagram how every price arithmetically involves a corresponding rate of premium on the present price (investment of capital) which will be unfolded as an income to the investor. Take the case of a house affording a net rent to the owner of $100 a year (after allowing for taxes, costs, depreciation). The price of the series of incomes is the amount at which the bids are brought to equilibrium, the marginal bidders being those just ready to drop out of the market if a slight change is made. This reflects the rate of time-preference in the individual economy, showing itself in the whole state of improvement and depreciation of agents in the possession of each man. *B* will prefer to rent so long as the house is priced at $2000 (involving a rate of 5 per cent) but prefers to buy when it is priced at $1800, a discount of 5.55 per cent. The expression of the price of time as a percentage is merely a convenience.

§ 5. **Bonds and mortgages as saleable incomes.** The mod-

ern corporation bond is a promise to pay an annual sum, expressed as a percentage of the principal, and to repay the principal at the definite date of maturity. A twenty year 5 per cent bond for $1000 thus is a promise to pay 19 annual incomes of $50 at the end of each year (but see note below) and one payment of $1050 at the end of the twentieth year. It could as well be termed a 20 payment $50 a year bond with a maturing value of $1000, without mentioning a rate of interest. The rate it truly yields the investor depends on the price he pays, which is fixed by market conditions. Such a bond does not necessarily sell at par (its denomination); usually it sells at a premium or at a discount. The investors treat a bond as so many incomes distributed at certain points of time, and bidding in the market fixes the market-price for future incomes of that type.[2] A note secured by real-estate mortgage is like the bond, but not so marketable, and is ordi-

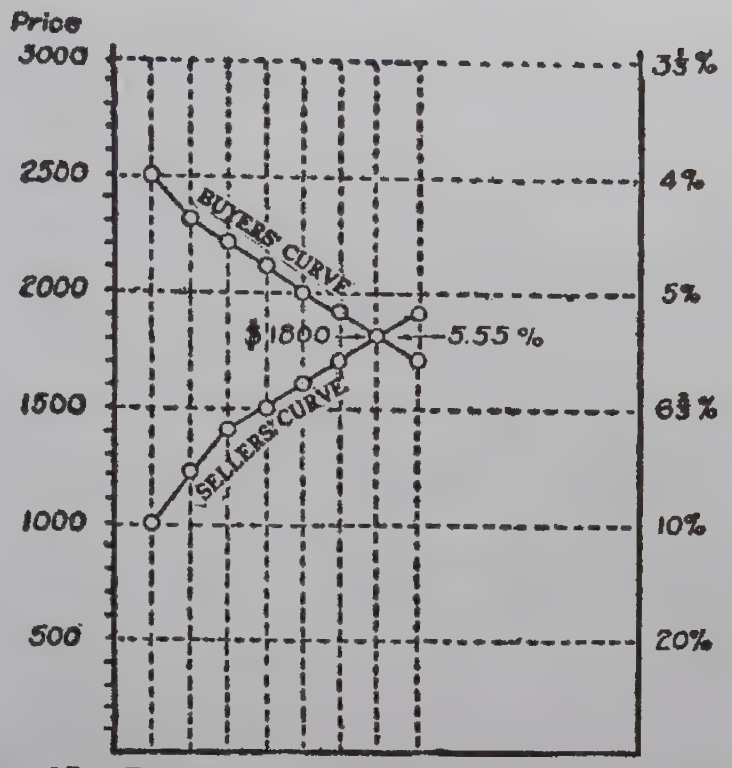


FIG. 37. PRICE AND RATE OF YIELD ON INVESTMENT, ANNUAL INCOME BEING $100.*

* This shows graphically that, the net yield of a durative agent being given, every possible price (capitalization) arithmetically corresponds with and involves a rate, which evolves as a rate of income on the investment.

2 In most cases the interest on bonds is payable semi-annually (at the *end* of each six months) and the bond tables showing the "rate of interest realized if purchased at prices named and held to maturity," otherwise known as the investment yield, are usually prepared with this condition in mind. This is equivalent to a slightly higher rate of interest.

narily held by the same investor until maturity. It usually (but not always) is bought at its face value and the holder looks upon it as capital to that amount. But as it is not payable until the date named as maturity, he could, if he wished, convert it into ready funds before it is due, selling it at the best price he can get, which may be above or below par. Thus a ten year mortgage for $5000, bearing 5 per cent interest, may be looked upon as containing nine annual payments of $250 each and a tenth payment of $5250. The total undiscounted sum of all the payments is $7500; and if the mortgage is bought at par it yields an annual net income of 5 per cent on the investment; if bought above par it yields an income of less than 5 per cent (e.g., bought at $5406 it yields 4 per cent).

This is a good illustration of what is meant by capital as contrasted with wealth. If the mortgaged house will bring a price of $10,000, that is the price of the wealth; but the owner has a capital of $5000, and the holder of the mortgage has a capital of $5000—which together are the total value of the wealth.

§ 6. **Price of variable and terminable incomes.** Cases of entirely uniform and perpetual incomes (even in expectation) are very rare. Most incomes are variable and terminable. These are capitalized and made comparable as to present worth with a uniform and perpetual series. Incomes may change in an upward direction, more or less regularly from year to year; they may decrease or they may remain the same for a series of years and then terminate abruptly; or they may vary by any combination of these changes.

Especially in modern times real-estate rentals, formerly the type of stability, have been rapidly altered by social changes, and so far as these changes are foreseen, expected rents are made the basis for present capitalization. Investors and owners alike may foresee that a piece of land used only for agriculture will, within a few years, be taken up for city lots, or will be needed for a factory or as the site of a railroad station. A vacant lot may be held for a number of years at a

good price while yielding nothing; in this case the incomes are all future, and the capitalization must be based upon the progressive series expected, beginning at zero. In some cases the physical output of any agent may decline while the price of the product increases, the resultant being perhaps a stationary yield or an increasing one. When foresters foresee that the selling price of the timber will be greater twenty-five years later than it is to-day, and they estimate the future yield of the forest on this basis, they advise expenditure that would be unwise if present prices were to continue. Again when the expected series of incomes is declining, as the royalties secured from mines, being certain to disappear at some more or less calculable date, the capital value of the mine is the present worth of a limited and degressive series of incomes.

The value of a short series may be calculated by simple arithmetical methods, and more easily by the aid of a table of present worth, when any rate of premium on the present is assumed. Suppose the rate to be .05 and the incomes expected are as follows: at the end of the 1st year, 100, of the 2nd year 75, of the 3d year 50, then ceasing. The present worth is the sum, $\frac{100}{(1.05)}+\frac{75}{(1.05)^2}+\frac{50}{(1.05)^3}=95.238+68.027+43.192=\$206.46$. Again it must be observed (see Chapter 22, sections 8, 9) that if the price is $206.46 it mathematically involves the rate of 5 per cent, quite independent of any thought; the calculation merely reveals and expresses exactly a rate inherent in the transaction.

§ 7. **Depreciation funds.** As a matter of practice the more difficult calculations of variable and terminable annuities are avoided by investors by taking the perpetual uniform series of incomes as the standard with which all the other series may be made comparable. They treat the original capital invested as a sum to be kept intact to be reinvested. The payments at the end of each year are treated as gross income to be divided between a depreciation fund sufficient to maintain the capital unimpaired at the end of the period, and net income which may either be spent or be saved (reinvested as an additional capital). In all bonds bought above par the amount

to be treated as a depreciation fund is larger in proportion to the nearness of the maturity of the bond, and in turn, the more distant the date of maturity the higher the present price of a bond bought or sold above par.[3] This method of calculating the capital investment as equivalent to a fixed sum of money is convenient, especially in distinguishing between income and principal. When losses are great they fall upon capital, and the income is a negative quantity. When prices of bonds rise, the income is larger than was expected, and (unless taken out in some way) is by a mere bookkeeping process counted as added to the capital, and the rate of income thereafter is reckoned on a higher basis of annual investment.[4]

§ 8. **Corporate securities.** Corporations are business enterprises which issue stock, or certificates of a share in their ownership and income. Doubtless the convenience of the sale and transfer of invested capital by the use of stock has been one of several reasons for the large increase of this form of organization since the beginning of the nineteenth century. Originally the stock of a company taken collectively represented all the capital invested, and each share entitled the

[3] E.g., in a circular issued in 1908 prices were quoted: "$100,000 City of Boston registered 4 per cent bonds, due June 1, 1928, price 106⅜, yielding 3.55 per cent; same kind due June 1, 1938, price 108¼ yielding 3.55 per cent; same kind due June 1, 1948, price 109½, yielding 3.55 per cent." The gross yearly income is $4000, of which but $3776.31 would be treated as net income, and $223.69 would have to be reinvested each year to leave the capital undiminished at the end of the period for which the bonds run. The opposite is necessarily the case with bonds bought at a discount, the rate of net income on the investment being somewhat larger than the percentage that the annual payment is of the par value.

[4] The practice of counting the capital as equal to a fixed sum of money has suggested to some the idea that capital is, in its very nature, a permanent quantity of value. But this is an illusion, for the "sum of value" may be both increased and diminished, and may be utterly swept away. Capital is no more than the bookkeeping expression of the present worth of a person's control over income, definite at the moment that the first investment has been made, and thereafter merely an estimate, until the property (right) is again sold at a price.

owner to a given portion (called a dividend) of the total income earned. The shares are issued in regular denominations in terms of money; this amount expressed on the face of the share is the so-called *nominal value,* or *par value,* or *face value.*[5] But as a business proves more or less profitable, the value of a share of its income rises and falls regardless of the nominal amount of stock issued. At once there is a divergence between the *denomination* and the *market-price* (often called value) of the stock. The nominal amount of stock is relatively permanent, the same year after year; it may be increased by further issues, or it may be decreased by cancelation after purchase with funds in the corporation's treasury. But when stock is the only form of claim on the earnings that is issued, the fluctuations of the market-price of the stock record the market's judgment of the business; that is, its expected dividends capitalized at a market-rate for investments of that grade of safety.

But in present practice there are several forms (of which stock is but one) in which corporate incomes are marketed and in which an investor may buy a share in the earnings of the business. Bonds, representing money loaned to a company and entitling their holder to regular interest payments, hold legal priority to the claims of any variety of stock. They usually do not give their owner a vote in the management or make him in the technical sense a part owner in the business. Next stands preferred stock, which entitles the owner to share first in the dividends, if there are any; and finally the common stock, which gets a share only when the other claims are satisfied. All of these are called corporate "securities," tho they are in many cases far from "secure," in the sense of being free from risk. By the multiplication and further variation of these readily saleable claims on industrial incomes,

[5] This is an unfortunate use of the term value. It would be better to speak of the amount of a single share as the *denomination,* and of the product of the denomination by the number of shares outstanding as the nominal *amount* of stock.

the investors' desires are met more fully and with greater precision, and correspondingly the corporations more conveniently obtain the funds needed.

§ 9. **Capital value of public franchises.** Franchises for the use of public highways by railroad, gas, water, and lighting companies enable their owners to get incomes which can be capitalized. If a company is given the exclusive right to operate in a locality (with use of streets, alleys, public roads, and the right of eminent domain to condemn private property) any income above an average rate of return on the investment is capitalized either in the higher price of the stock or in additional stock issued without additional outlay upon the plant. If the franchise is unlimited, the income may be capitalized as practically perpetual; if the franchise is limited, and is to expire in thirty or forty years, only the limited series of privileged incomes can ordinarily be capitalized. When, however, the managers are able to exert influence enough to have the franchise extended, and the investors believe in the skill of the managers to influence the legislators by fair means or foul, the value of the stock continues higher than it could usually be under a limited franchise. Such circumstances becloud the question whether the exceptional income arising under the franchise should go to the public or to the company. The important question, however, is whether the company is entitled to the income, for if so, the capitalizing of the income somehow, as is done in every other business, is inevitable.

§ 10. **Incomes sold in perpetuity.** In creating any income-yielding debt, public or private, the seller is capitalizing the promise of regular incomes to be paid to the buyer. It is not essential that a debt agreement should call for the repayment of the capital sum advanced by the lender. Many if not all of the early "public stocks" were in form promises to pay an annual income perpetually (without specified date of maturity) as the "British consols" (national bonds) are to-day. They sold for whatever they would bring in the mar-

ket as a means of borrowing money. They could be redeemed and canceled only by purchasing them at their price in the open market.

The sale, in the Middle Ages, of a "charge" on the rents of a landed estate, called a "rent charge," was in very similar form.[6] A landowner, wishing money to go on a crusade or to improve his estate or to invest in some other business, sold a rent-paper entitling the purchaser to receive permanently a given sum, to be paid out of the rent of the estate. The debt was a "charge" upon the rent, until it was paid. The seller gave up the right to retain that amount of rent as it came in year by year, and received a capital sum in hand. Generally he had the right to repay the sum whenever he wished and thus extinguish the rent-charge. Logically viewed, the purchaser, in buying an equitable part of the income, bought an equitable part of the rent-bearing wealth. In effect it was just like a loan except that the purchaser of the rent-charge could not demand the repayment of his money. He could, however, sell the rent-charge when he wished to get his capital out. Gradually it became usual to sell and transfer rent-papers just as is done to-day with mortgages and bonds. Rent-papers thus came in the fifteenth century to be negotiable paper in somewhat general use. There was a rise and fall of the value of the rent-paper with changes in the demand for investment in rent-charges or with changes in the security.

§ 11. **Bonds with fixed maturity.** The modern public and corporate bonds issued by nations, states, municipalities, and corporations, for war, public buildings, public works, such as wharves, canals, water supply, etc., are looked upon by both the borrower and the lender much in the same way as were the old annuities. The main difference is that the modern obligations promise to repay a stated capital after a stated number of years. If the income of a $1000 4 per cent bond (interest payable semi-annually) running for 20 years,

[6] See ch. 14, sec. 4.

is $40, and the bond sells for $900, it will yield an income of $40 each year for 19 years and an income of $1040 the 25th year, of which $900 equals the original capital invested, and $100 is the increment of value distributed over the whole period. Such a transaction would be said to net the investor 4.78 per cent. The incomes received from public bonds are paid from the proceeds of taxation and are a charge on the rents and incomes of all taxable property; and the incomes received from bonds of industrial and public service corporations are a charge on the earnings of the enterprises.

Even a deposit evidenced by an interest bearing "certificate of deposit" in a commercial bank or in a savings bank may be seen to have this same character. The bank is the borrower, exchanging the promise to pay each year, or half year, or quarter, an amount of interest proportioned to the amount deposited, and to repay the capital sum on certain agreed conditions. The life annuities sold by insurance companies preserve very closely the character of the old annuities and rent-charges, tho the annuity that can be bought for a present payment is proportionately larger than a perpetual annuity, because the number of payments is limited to the lifetime of the purchaser.

CHAPTER 24

SAVING AND BORROWING

§ 1. Abstinence of the conservative kind. § 2. Cumulative abstinence. § 3. Spenders and savers. § 4. No common standard of abstinence. § 5. Saving without and with the use of money. § 6. Classes of borrowers. § 7. Victims of mischance. § 8. The chronic improvident borrower. § 9. Premium concealed in retail prices. § 10. The prodigal borrower. § 11. Students and apprentices. § 12. Becoming-owners as borrowers. § 13. The borrower for profit.

§ 1. **Abstinence of the conservative kind.** Abstinence is the name of that faculty of mind which enables present desires to be subordinated to future desires. Abstinence (the faculty) expresses itself in particular acts known as abstaining, or as saving. Conservative abstinence is that which keeps men from using up or invading their present stock of goods, and cumulative abstinence is that which impels them to add to that stock. There is no sharp dividing line, no abrupt break, between these two, yet on the whole they differ. Conservative abstinence is a quality of mind analogous to the inertia and momentum of physical matter, and makes men resist stubbornly a reduction of property, of income, and of an accustomed social position, even when there is little or no disposition to increase or advance them. It is this which makes nearly all men think that using up any part of their principal (when they have sold property or have collected loans) is a very different thing from regularly using up their free income. A large part of accumulation results from the operation of conservative abstinence. Through insurance for one's family, purchase of annuities, laying up "for a rainy day" or for old age, etc., guided by the conservative quality of mind, men seek to *maintain* (rather than

to increase) the standard of themselves or their families.

§ 2. **Cumulative abstinence.** Adding to wealth at the cost of a present lowering of long-accustomed standards of living is a rare occurrence; but in a large number of cases where there is no deliberate purpose to go beyond conservative abstinence, the uncertainties of life, insensible changes in the habitual standard of possession, desire to leave children a larger patrimony, etc., tend to the heaping up of wealth for heirs. It is much easier to accept a higher than a lower standard of living. Consequently, deliberate cumulative abstinence is most likely to appear at favorable times in the lives of men of rising fortunes, who, while maintaining or even increasing their scale of expenditure, are able to add to their riches. Accumulation comes to be to some men the one game they can enjoy. I recently met an old man who generously was bent on becoming richer so that, as he said, his attractive young wife might get a second husband as good as her first one.

Many successful business men evidently are accumulating not because of a desire to enjoy more material income themselves, excepting in so far as that is necessary to present success or is the evidence that they are succeeding in the present. Business has in it always something of the character of a game, and the game can not be won unless at one place and another the resources of the business are steadily enlarged. The older inexpensive equipment must be replaced by newer and more costly, the stock must be increased and the buildings enlarged, if the business is to maintain its place among competitors and outstrip them. The cumulative abstinence in such cases seems to be but an outgrowth and result, under favoring conditions, of an original conservative motive.

Abstinence of either kind is the guardian of the individual's future against his present desires. Upon the conservative faculty depend the preservation, repair, replacement, and economic use of our environment; upon the cumulative faculty depend largely its growth and betterment. As the

capital values in a community are many times as great as the savings in a single year, and as a large part of the savings result from conservative motives, it is evident that the pressure and resistance of conservative abstinence against present desires must be steadily many times as great as that exerted by cumulative abstinence.

§ 3. **Spenders and savers.** The uniform preference for present over future would lead a Robinson Crusoe to use up and wear out his wealth, and to apply all his labor to present enjoyment, even on the penalty of future misery. On the other hand, the excessive preference for the future over the present would condemn him to the miser's fate of misery and starvation in the midst of wealth. Evidently somewhere between these two extremes he must settle upon some rule of life and habit of choice that involves a ratio of exchange of present and future uses. The world is made up of people each with his habit of choice, not absolutely fixed, slowly changing with years, with education and with circumstances, and occasionally broken into by impulse. Members of families and of groups show some likeness in their habits of choice. Each one having separate control over incomes through the institution of private property, is able to maintain his own standards. It is a matter of degree, ranging from those who spend all they can get hold of, to those who save nearly all. Thus at any time the community is made up of those who are spending more than their incomes, those who are spending just up to their incomes (the large class of conservative abstainers), and those who are spending less than their incomes (the cumulative abstainers). This psychological difference between abstainers and prodigals varies from one person to another, depending on natural temperament, on habit bred of family and community customs and training, and on states of health and on moods affecting the appetites, the imagination, the conscience, and the will.

§ 4. **No common standard of abstinence.** It must not be thought that any two men's savings in terms of dollars ex-

press the comparative degrees of abstinence, sacrifice, suffering, deprivation, etc., of the two men. A poor man denies himself many simple comforts for years to pay $1000 for a little home; a rich man may be able to buy $100,000 of bonds with a fraction of the profits of a rising business or of a growing income from investments while increasing his living expenses in all directions. It is absurd to suggest that the latter has abstained a hundred times as much as the former in a subjective sense.

It might seem that it would be easier for a well-fed, well-clothed, well-housed man to exercise abstinence than for a hungry, ill-clad man with no roof over his head. But neither saving nor prodigality is regularly related to any particular state of fortune or is found exclusively among either rich or poor. A poor peasant living on the most meager fare may possess in high degree the quality of abstinence which is entirely lacking in the rich spendthrift. A man well on in life with a simple standard of living can easily save a large share of an increasing income.

Abstinence is a resultant of the opposing forces of desire in the one man's will. Both of the poor man's desires dependent on a dollar may be very strong (we have no psychic standard unit) but the desire for present enjoyment be the stronger; whereas both the rich man's desires that are dependent on a thousand dollars may be very weak, yet the desire for the present good be the weaker. Natural differences in temperament combine with education, habit, and the imitation of prevailing standards to make desires mild or intense. Saving may result when a vivid imagination aids in making the future desire stronger than present strong impulse; or it may result when very simple tastes fixed by habit are combined with equally habitual and unreasoning frugality. The magnitude of 10 minus 8 is greater than that of 100 minus 99. Two men's powers of abstinence can not be numerically compared, but the objective results appearing in the amounts saved can be compared.

§ 5. **Saving without and with the use of money.** Abstinence of the conservative sort shows its results in keeping in repair and providing for the replacement of fertile soil, ditches, fences, houses, tools, and equipment of every kind in the owner's possession. Much of this does not need to take the money form, but much of it does, as in payment of wages and purchase of materials to keep up repairs, and in the laying aside of a depreciation fund, or the provision of insurance to replace the agents when destroyed. It calls for positive effort on the part of the owner to resist treating gross usance and receipts of his fields, tools and other equipment as a disposable income, in order to enjoy a more bountiful present at the expense of the future. In many ways one may "borrow from the future" without borrowing from any person (unless it be one's self).

Abstinence of the cumulative sort likewise can and does in large measure take the form of saving in kind rather than in money. One has but to dispose of his labor and wealth so as to use in each period less than the full net income of the period and to put the surplus into durable forms yielding future incomes. The pressure of present desire is so great, and so many unexpected present needs crowd upon men, that few find it possible or think it possible to save much in this way, and fewer still find it easy.

When incomes are received in money, saving usually takes that form. Every clear dollar of money income (after providing for the maintenance of the principal) is disposable either as present enjoyment or as savings to constitute a new capital. This may be done by buying labor and materials to build new agents, "adding barn to barn," or it may be by buying other durative direct agents, as a house to live in where one has been paying rent, or it may be by buying durative indirect agents, as a horse and plow which one has had to hire for use in his own fields. Or the money may be used to purchase a factory, or to hire laborers and to buy materials to create a new industry.

A large part of money savings, however, takes the contractual form. The saver may take out an insurance policy. He may deposit in a savings bank (or commercial bank with a savings department) and get from 2 to 4 per cent interest, the bank in turn buying bonds of corporations, or making loans on mortgage security at a higher rate of interest. He may loan to a business man or to a house builder, taking notes and mortgages, or he may buy bonds and mortgages from a corporation. In all these cases the money loaned is transferred to another, and if wisely invested, will produce new incomes. Money saved can be made to yield an income only by being spent—that is, invested in some way.[1]

§ 6. **Classes of borrowers.** A distinction is usually made according to the purpose of the borrower, between two main classes of loans: consumptive and productive loans. Consumptive is the adjective usually applied to a loan made for the direct use of one's self (or of one's dependents). It is borrowing by a spender, and virtually undoes, negatives,

[1] Some reservoirs of small savings in the United States in 1914 are here indicated.

Savings bank [a] depositors, 11,100,000 [c]; deposits	$ 5,000,000,000
Postal savings, deposits	50,000,000 [b]
Building & L. Asso. members 2,800,000 [c]; assets	1,250,000,000
Insurance (assessment) policy holders 8,800,000 [c]; assets	195,000,000
Insurance, ordinary and industrial policy holders 38,200,000 [c]; assets	4,700,000,000
Total	$11,195,000,000

[a] Do not include savings departments or interest-bearing time deposits of commercial banks, which doubtless are large.

[b] Estimated; postal savings in the United States have been increasing at the rate of about $1,000,000 a month since the beginning of the postals savings plan in January, 1911.

[c] The same person may be counted more than once in these statistics.

It is estimated (by Le Moniteur des Intérêts matériels) that the net additional issues (i.e., not including conversions) of securities (corporate and public) in the world between 1896 and 1913 was as follows—

3 years, 1896–1898, average	$1,700,000,000	yearly
6 years, 1899–1904, average	2,000,000,000	yearly
3 years, 1905–1907, average	3,100,000,000	yearly
6 years, 1908–1913, average	4,000,000,000	yearly

the act of the abstainer. This was almost the only kind of borrowing before the development of modern money markets. Among the many varieties of circumstances in real life several types of consumptive borrowers are distinguishable: (1) the victim of chance, (2) the chronic improvident, (3) the prodigal, (4) students or apprentices, and (5) abstaining users, or becoming-owners.

§ 7. **Victims of mischance.** Some kinds of misfortune are comparatively rare, are difficult if not impossible to provide against, and fall with overwhelming weight upon the unprepared victim. Such misfortunes are fires, floods, hurricanes, earthquakes, failure of crops through drought, excessive rain, pests, hail and windstorms; such are bodily accident through burns, cuts, falls, crushing weights and strains, which partially or completely, temporarily or permanently, disable from labor, or cause the death of a breadwinning member of the family. Such also are many industrial accidents as the cutting off of the usual employment through failure of the sources of materials, loss of vessels in transit, brigandage, war, etc. In all such cases the victim's condition suddenly falls below the accustomed and the normal. Sometimes immediate food, fuel, and clothing are a necessity of bare existence. One standing face to face with starvation can not be worse off a year hence; nearly always there is some ground to hope that if the present misfortune can be relieved, fate will be kinder in future. One who expects to be better provided in the future will choose to pay a premium for a loan. When the present misfortune is far short of starvation, and is but a certain measure of inconvenience, the same kind of a motive exists, tho in a lesser degree. A loan at such a time, it must be remembered, is but the choice of the least of evils. If the person can not borrow he is tempted to increase his too small present income by converting, pledging, or selling, his control over future income. He may do this at great cost (equivalent to a large discount) by treating the present tangible wealth as if it were income,

eating up the seed corn, and neglecting repairs on house and field and tools. Or he may exchange his durative wealth to get a larger present control of enjoyable goods. This, at a forced sale or in an unfavorable market, he can do only at low prices, much lower than must be paid to replace them.[2]

To one faced with such a choice the pawnbroker with his exacting terms must at the moment appear as a benefactor. He has not created the distress; he appears to offer the best way out of it. A defect of this alternative is that the loan is not made in a true market. There exists no true market for making such loans. The necessitous borrower usually is forced to make an isolated trade where he is in no position to higgle, where he must make the utmost concession to a hard bargainer. Such opportunities attract and develop a class of grasping usurers, "the loan sharks," who hold the victims of chattel mortgages in a veritable serfdom. The hard bargain is made still harder by other arbitrary and dishonest exactions for renewing the loan. Tho the object pledged may be of little value to others, it often has a personal and sentimental value (as an heirloom or a keepsake) so that the borrower will make great efforts to prevent its forfeiture.

§ 8. **The chronic improvident borrower.** Another type of necessitous, would-be borrower is the chronic improvident. Not only mental incompetents and drunkards, but many honest families live always near the border of want. It needs no general catastrophe, or no very unusual bodily or industrial accident, to reduce them to distress. Such persons and families, it must be remembered, are always outside of

[2] Such cases of dire necessity are in primitive communities usually relieved by a neighbor as a friendly duty, without charge, tho the borrower is under moral obligation not only to repay the loan but to render like friendly accommodation if it should be needed. This view long continued to be accepted as ethical, and charging a premium (interest) on loans was condemned by moral and religious codes. The Jews (and not they alone) retained the prohibition of "usury" among themselves, but permitted "usury" from strangers.

the normal loan market. They are not able to borrow enough to bring their rate of time-preference into uniformity with the market rate of interest. The kind and amount of security (pledges of capital) they have to offer is not acceptable, small loans to them involve such elements of risk and trouble, that ordinarily they can not borrow at perhaps double the prevailing market rate. Within their own economies, therefore, all things are adjusted to a high rate of time-discount. When fortune frowns they too go to the usurer, taking with them the best pledge they can offer. An artist, now successful, tells that he and his wife have a peculiar affection for her engagement ring, because it paid their rent so many times—to the pawn shop at the beginning of each month, and back home again whenever any pictures were sold. Some struggling artists and inventors as well as gamblers and horsemen come to know the pawning value of every belonging—rings, stick-pin, watch, etc. In times of prosperity their saving takes the form of gold ornaments and diamonds (which make good pledges) as they dare not trust themselves to keep money until the time of dire distress. A struggling student of my acquaintance in New York walked twelve miles to exchange a Mexican dollar (his last coin) for forty-four cents with which to buy crackers. A very high rate of premium on present goods was involved in that action. The fact is that even the most improvident and ill-provided families have, involved in their domestic economies, a more or less definite rate of time-preference, and only when the pressure of present desire greatly increases, do they bring their scanty pledges to borrow money as the best way to adjust their incomes in accord with their time-choice.[3]

§ 9. **Premium concealed in retail prices.** The borrowing of goods without agreement to pay interest usually involves a premium on present goods. The high rate of time-preference

[3] To serve this class, public pawnshops have been established by the governments of many European cities, and by private benevolence in some cities of America.

among the chronically improvident is the foundation of the credit system in retail stores. In some cases merchants will not sell cheaper for cash than for credit, for fear of offending their main body of credit customers; but there are good reasons why such a difference should be made, and usually it is made if the buyer for cash quietly urges his proposition. In many stores there are two appreciably different prices, one for "slow pay," the other for "spot cash." Some stores specialize on the slow pay customers and sell on the instalment plan, assuring everybody, "Your credit is good here." If a bill paid at the end of the month is 5 per cent more than what may be called the fair cash price, the difference is equal to 60 per cent per annum on the month's average expenditure. This much is often paid by perfectly honest persons for the privilege of postponing payment. If a man with an income of $50 a month is always behind a month, and as a result pays 5 per cent premium on his purchases over cash prices, he is losing $2.50 a month, $30 a year, or 60 per cent of one month's salary, the amount which he is always in debt. Such a premium is paid only by the improvident, but that is a large class with recruits as well from colleges as from factories. Shopkeepers are forced to make this difference to earn the equivalent of interest on the capital thus invested, and to recover the costs of bookkeeping and collections, and the risk and loss of unpaid bills. The high rate paid by the purchaser becomes only a low net rate, on the average, to the shopkeeper. The economical thing for the customer to do would be to retrench expenses rigorously until he "gets $50 ahead" and is able to pay cash. He would be able to use this so as to increase his real income by $30 worth of goods a year; and meantime, and in any case, he could gain $2.08 a month by borrowing $50 at 10 per cent interest (42 cents a month) exorbitant as that rate seems, and paying cash for everything. The obstacle usually is weakness of will power.

The notoriously high retail prices paid by the poor even

for cash purchases when made in very small quantities, is a penalty of the same kind for lack of a little capital. They buy a pound of sugar instead of a dollar's worth, a bucketful of coal instead of a ton at a time, etc., a practice costly of their own time and of the small shopkeeper's time who must get higher prices to make a bare living selling in that way. The time-premium outgo from the customer is usually not a corresponding time-premium income to the merchant, but merely pays for services and other store expenses.

Probably we should class as examples of the same type of loans, on a large scale, those made by governments in time of war. If the national territory, or the real or supposed national interests and honor, are threatened, the citizens often value them beyond any possible money-price. To win they are ready to sacrifice their lives, *a fortiori* they are ready to sacrifice a part of their material fortunes. The immediate need is large supplies to feed soldiers and to arm them with tools to burn, batter, and blow up the enemy. High rates of interest are offered by the government and large obligations are assumed for the future, to tempt its own citizens or those of foreign states to furnish the money to buy these supplies and instruments of destruction.

§ 10. **The prodigal borrower.** The peculiarity of the prodigal type of consumptive borrower is in the artificial, self-indulgent, subjective character of the desires that impel him to borrow. He has capital, relatively a good deal of it. A prodigal usually is one who has come into his fortune by chance—inheritance, gambling, a lucky stroke of business—and therefore is without discipline in thrift. With a habitual high rate of time-preference, he comes into sudden possession of incomes capitalized at a low rate. He is impatient at the slowness with which the incomes ripen, and he takes measures to hasten them to gratify desires long latent, and now upspringing, often in a favoring atmosphere of flattery, vanity, and false friendship. Sometimes he meets the difficulty by selling some property; or he temporizes and borrows money

with a vague hope that some way may be found to retain his property. When interest is 10 per cent, a promise of a hundred dollars a year gives immediate control of a thousand dollars; when 5 per cent, control of two thousand dollars. Lacking business experience he is not likely to find the best form of loan. To secure an immediate loan he lightly agrees to pay an exorbitant rate of interest often made necessary by the prospect of his financial collapse. It is clear that the high rate of interest he pays is but a reflection of a time-valuation that already exists in his mind. The net result of such a course is a transfer of property from the prodigal to others, a wasteful transfer in which often scheming and avaricious men gain unjustly, and often the savings of true abstainers are transformed into riotous living and foolish display.

§ 11. **Students and apprentices.** We come now to some cases of consumptive loans with a more provident motive, that of increasing the future earning-power of the borrower. A student borrows money to spend for food, clothing, text-books, tuition, etc., needed while taking a course in college. When he borrows he has little earning-power, but with that faith in himself which makes the young American so interesting, he pictures himself four years later, sheepskin in hand, drawing a munificent salary with which he can easily satisfy the most exacting Shylock. Apprentices, young lawyers waiting for clients, physicians slowly gaining a practice, business men "working up trade," have enough faith in themselves to borrow meantime what they need to live on. They may be disappointed and suffer loss, but hope supplies their motive in borrowing.[4]

[4] Especially when such expenditure for self-improvement is directly in industrial lines, as learning a manual trade, or a profession (as dentistry, medicine, engineering, architecture, etc.) there is a temptation to call this "an investment of capital," or a capitalizing of man's earning power. But that is merely a figure of speech, tho it is true that the outlay for utilitarian training is made in order to increase the earning power of the learner. But the future incomes can not be

In this type of consumptive loans we see a very different motive from the former types. The borrower is looking to future needs, not to present indulgence, and the loan is useless for its purpose unless he supplements it with a true abstainer's spirit, adding his industry, self-denial, and forethought to attain the end of his education. This type of consumptive loan is often economically better than one to spend upon material production.

§ 12. **Becoming-owners as borrowers.** The fifth type of consumptive borrower, the becoming-owner, has also a provident motive. He borrows not in order to consume *more* wealth than he otherwise could, but in order to pay for it by a different method, namely, under the interest contract instead of under the renting contract. To do this he borrows the money to buy the agent in use, and becomes its owner. His right is not absolute but is qualified by the equity of the creditor to whom the property is pledged. (Chapter 22, section 3.) This condition might continue without any effort of the borrower to save and thus reduce the debt; but so generally is this kind of loan prompted by motives of thrift and made in anticipation of and as an aid to saving, that such borrowers deserve to be called abstaining users.

Of this type are purchases on credit or on the instalment plan of sewing machines, typewriters, and many other labor-saving machines, not as added means of direct enjoyment (such as are automobiles, canoes, pianos) but as better means of obtaining direct goods without the sale of products. Of this kind also is the loan to build a house for the borrower, or to buy outright anything of a kind already used by him under the renting contract (as a farm considered as a direct good, a house to live in, a source of food for the family, etc.). If one who has been renting house, farm, machine, etc., ceases to rent and buys under the interest contract, he assumes a new responsibility as the legal owner of the wealth,

capitalized, because man can not sell himself in sum. He can but earn a wage or salary for successive services.

but often he reaps a benefit by the change. The gross rent paid by a tenant (Chapter 15, section 2) must include not only taxes and repairs, but something to cover risk of bad collections, trouble of management, damage through carelessness of tenants, etc. Rent of a good grade of house built for tenants[5] is therefore usually 10 per cent of the selling price, and not infrequently higher, being, it is said, as high as 25 per cent on bad tenements where risk, damage, and trouble are especially great. A man living in a $2400 house and paying $20 a month rent, and able to borrow at 6 per cent could buy the house, pay $12 a month interest, and out of the balance of $8, after paying taxes and repairs, have something left as a sinking fund. By saving a few dollars more each month he can, within a few years, become the absolute owner. His pride and pleasure as an owner often leads him to add further to the value of his investment by making improvements in yard and buildings which he would not make as a tenant.

The great capital in the building and loan associations, over a billion and a quarter dollars in 1914, is slowly becoming the absolute property of the borrowing owners, whose places are taken by others thus acquiring homes. This capital, large as it seems, is but a fraction of the amount constantly being acquired in this way by owners of homes mortgaged to savings banks, to corporations (universities, philanthropic endowments, etc.) and to private lenders, directly or through lending agencies.

§ 13. **The borrower for profit.** The term "productive loan"[6] has generally been applied to the borrowing of capi-

[5] This proviso "built for tenants" is significant, for houses built by well-to-do owners for themselves are often so elaborately finished that they are notoriously poor investments when let to tenants.

[6] But some of the so-called consumptive loans above are productive in the sense which we recognize. The money borrowed to build a house, to buy a pump to supply water, or a machine to sew cloth, or even an automobile to produce psychic income for the owner, is productive. A clearer distinction can be made between the non-commercial

tal to be used in carrying on of business either mercantile or manufacturing—that is, in buying goods to sell again. The borrower is a middleman whose motive is to get a "profit" by sale to an ultimate user. This type of loan must be more fully discussed in connection with the problem of enterprise and profit, and only the briefest indication of the relation of the interest-rate to capitalization need here be given. The borrower expects to pay the interest out of the surplus income (over and above the capital investment) which the sale of the products will put into his hands. This success in getting a surplus large enough to leave him a balance sufficient to pay interest depends on his investing the money in agents not capitalized too high; any balance of profit depends on his selecting a kind of agents and so directing their use, that he can make them earn more than the market rate of interest.

and the commercial nature of the products, between loans by ultimate users of the goods (the occupant of the house, the user of the water from the pump, etc.), and loans by middlemen who produce to sell to ultimate users.

CHAPTER 25

CAPITALIZATION AND INTEREST

§ 1. Interest subsequent to time-price. § 2. Origin and definition of the term interest. § 3. Interest versus income, or gross versus net interest. § 4. Concealed rate of interest. § 5. Commercial paper. § 6. Mercantile cash discounts. § 7. Long-time loans. § 8. Special markets for money loans. § 9. Capitalization, the clue to the general interest rate. § 10. Time-series of incomes, monetary and non-monetary. § 11. Present dollars and what they can buy. § 12. Blending of the investment premiums into a common rate. § 13. Indicative nature of the interest rate.

§ 1. **Interest subsequent to time-price.** There remains to consider that form of a price for time which is most prominent in the thoughts of men in the business world, which therefore often is the only form that is recognized—namely, interest on a loan of money, or on credit expressed in terms of money. The buying and selling of anything for a price expressed arithmetically was very unusual until some form of money came into use; and this was particularly true of the sale of timeliness in a barter economy. The loaning of money occurred in the commercial cities of ancient times, but for a long period, in the Middle Ages, was very unusual. The practice again became common in commercial cities of Europe about the fifteenth and sixteenth centuries. The deepest thinkers from Aristotle (B.C. 384–322) to Thomas Aquinas (1224–1274 A.D.) could see nothing in a money-loan but its superficial money-aspect, nothing of its underlying economic nature, and they studied the problem only as one of morals. When, despite all the disapproval of philosophic moralists of church and state, the practice of money loans had become common in commercial circles in cities, the

earlier economists began to attempt an explanation of the phenomena. A prevailing rate of premium on money-loans appeared only where money was in use, and therefore at first was deemed to be peculiarly connected with the quantity of money in the country. This idea still widely persists, is indeed the naïve theory of every mind until it is corrected by some economic thought. Some economists began to see that the rate of interest on money-loans was somehow a reflection of the general state of wealth of the community, and was not in the long run dependent on the quantity of money in the community. Behind the problem of the rate on contractual loans was seen to be a more fundamental economic problem of value. The explanation of the problem was, however, still begun in the market for contractual loans, the so-called money market. We, having studied the nature of time-preference and of capitalization, are in a position from which to view money-loans in a different way, and to see them in their true character as merely forms in which time-preference sometimes appears in an economy where money is in general use and borrowing is common in commercial affairs.

§ 2. **Origin and definition of the term interest.** The term interest,[1] applied in the Middle Ages to a payment for the use of a money loan, was first a substitute for the word usury. It was intended, by indicating that the lender had something involved in the business, to soften the general opposition of the church and of public opinion to such agreements.

The word interest will be here defined in its original meaning, still almost universal in business circles, to wit: *Interest* is the amount paid and received according to a con-

1 The economists of the eighteenth, and early part of the nineteenth, century gradually broadened the term to include any income attributable to those goods generally bought and sold in terms of money. Later the term was extended to include, tho never consistently, a large part of the problem of time-value, the nature of which was beginning to be seen.

tract for credit given in terms of money. Credit is the postponement of the right of either party in an exchange to require immediate delivery of the price agreed upon. The creditor puts faith (credence) in the promise of the debtor. The rate of interest is the percentage that the interest (usually for one year) makes of the principal. The principal is the amount loaned expressed in dollars as a capital sum estimated apart from the interest. Interest, in this sense, always is a price, and not simply an individual's estimate. Its amount is always stipulated by a contract between persons (expressed or implied, as either the customary amount or the legal amount specified by statute law). The interest contract may not illogically be looked upon as a special case of the rent contract, the thing rented being a stated amount of money (the standard of deferred payments or things acceptable to the lender as of equal value) and the rent (interest) being a smaller amount of money. Interest is payable at stipulated periods until the money loaned is returned. The expression of the interest as a percentage (rate of interest) is of great practical convenience, permitting as it does payment of parts of the principal and for partial periods of a year without alteration of the contract. Moreover, the expression of interest as a rate per cent of the principal gives to the interest problem an aspect very different from any presented by the rent problem.[2]

§ 3. **Interest versus income, or gross versus net income.** The sum paid as interest on a loan and the rate specified contain other elements than a pure time-price. This is recognized constantly in practice and must be observed in theory.

[2] When the amount of the loan is expressed as more than the borrower receives, the deduction being either in lieu of, or in addition to, an expressed percentage, the deduction, called discount, is interest taken in advance, and therefore is not exactly equivalent in rate to the same payment at the end of year, the time at which the usual rate is calculated; e.g., if a note for $1000 is discounted at 6 per cent the true principal is $940, and the true interest $60 at the rate of .06383. See ch. 23, sec. 3, note.

Gross interest must be distinguished from net interest. The lender does not, as in most cases of rent, have to make allowance for repairs and for physical depreciation of the objects loaned, for the borrower is bound to return the specific standard of payment; but allowance must be made first for risk, or the chance that the money will not be all returned or paid promptly. Risk and trouble are to interest what depreciation and repairs are to rent. (Chapter 15, section 2.) Money loaned in hazardous ventures must yield a higher contractual rate of interest to offset this, or the true rate realized will, on the average, be less than the market rate. The lender may in the end get either more or less than the usual interest, or even get negative interest through the loss of a whole or a part of his capital. A lender strives in making a number of loans to have the gains cancel the losses, so that the capital may be kept intact, besides yielding a net income (interest).

The lender must also count the cost of placing, supervising, and collecting the loan. A pawnbroker lends only small sums and spends much time and effort to keep at interest a moderate capital. The sum of $5000 loaned for a year in sums averaging $10 represents 500 transactions, yet if placed at 5 per cent it yields an income of but $250 a year.[3] While, therefore, the borrower of a small sum may think he is paying an oppressively high rate of interest, the lender may find that the loan nets him a very small rate of income on the investment. Risk, labor, and the various costs of carrying on the business of lending money, are thus costs in exchanging things of different time-periods which are analogous to transportation charges in exchanging things at different places, nar-

[3] The Provident Loan Association of New York is a corporation organized as a philanthropy to release the poor borrower from the jaws of the "loan-shark"; but it is conducted on business principles to pay expenses. It finds that the minimum cost of making a loan, even the smallest, is about 49 cents. Yet it makes a large number of loans of amounts less than $10, and for not over a month at the rate of 1 per cent per month (or 10 cents at the maximum). This loss must be made up by the larger loans.

rowing the margin of advantage and excluding many from the exchange.

§ 4. **Concealed rate of interest.** Interest is often concealed under forms which make the real rate greater than the nominal, or apparent, rate. It is well known that usury laws fixing the legal rate of interest are often evaded. A simple method is for the lender to charge a commission for making the loan, or, if the lender is a bank, to charge for a pretended cost of exchange to bring the money from some other city. Sometimes the borrower is required to keep larger deposits with the bank than he voluntarily would, which he does by borrowing and paying interest on a larger sum that he is permitted to use. Again the borrower, in periods of unusual demands for money, may be forced to make a long loan instead of a short one. When a one month's loan at 10 per cent would meet his need, he may be forced to borrow for twelve months at 6 per cent, during ten months of which time 4 or 5 per cent is the prevailing rate. In these and other ways the real amount and the real rate of interest are made different from those that are expressed.

§ 5. **Commercial paper.** Interest-bearing loans may be roughly divided into short-time and long-time loans, according as they run for less than a year or for a year or more. In short-time loans the creditor's claim may rest either on a verbal agreement or on a written promissory note. Short-term interest contracts are implied in a large proportion of the transactions of modern commerce. A considerable number of short-time loans are made for direct enjoyable use to individuals whose money income is delayed or inconveniently apportioned in time. But a far larger number of such loans are made by banks on promissory notes given by manufacturers and merchants, frequently secured by bills of lading for goods that have been shipped to customers or by various other evidences of existing credits. Such documents are called commercial paper, or credit instruments.

§ 6. **Mercantile cash discounts.** When goods are sold on

time (as thirty, sixty, or ninety days) the contract (except in rare cases where the terms are net cash) is an implied interest contract, for it specifies that the full sum shall be charged only when the full time elapses; otherwise the discounts for cash are at various figures, such as 1, 2, or 6 per cent or even higher for payment in ten days (giving time enough to examine the goods), and smaller rates for thirty days or other periods. This virtually makes two or more prices, one to customers that pay cash, and another to those letting bills run. The difference between cash in ten days and a discount of 1 per cent in thirty days is equivalent to a rate of 18 per cent a year on the amount of the bill, and is so great that it is impossible without taking advantage of the discount, for a buyer to carry on a business against strong competition. Such purchases on credit frequently are made, however, not only by dealers in small towns, but sometimes by large mercantile establishments when short of funds. "Slow collections" go along with increasing interest rates and "hard times."

If the purchaser does not discount his bills, the seller has the choice either of waiting till the account is due and collecting the bills direct from the customers, or of discounting the customers' acceptances (notes) for ready money at the bank. According to the conditions and needs of the particular business, either method may be chosen. A series of credits is then created, each resting upon the one below: manufacturer A sells goods to manufacturer B, who sells the finished product to the jobber C, who sells it to the retailer D, who sells it to consumer E, and all these credits for the same goods may be in existence at the same time, and every one may be represented by a promissory note that may be discounted at a bank. In most industries there is need for larger capital at the seasons when the product is put upon the market, and ordinarily a large part of these debts are converted into ready funds (discounted) at the banks. The merchant or manufacturer plans his business in the expecta-

tion of an average rate of interest at such times, and if it chances that the rate is abnormally high, he has no choice but to go on borrowing and paying the high rate of interest out of the expected profits of his business. This risk of a change in the interest rate is one of the many chances he has to run.

§ 7. **Long-time loans.** A large part of the debts in modern times are outstanding for a term of years and represent the lender's purchase of a claim on income from public or private sources. The most familiar form of long-time loan is that made on the security of real estate, which is mortgaged to the lender for the term of the debt. Usually the debtor is obliged to pay the interest either annually or semi-annually, and often, but not always, is permitted to reduce the principal by partial payments. These real-estate mortgages rest on the security of the particular mortgaged wealth, and, unlike most short-time loans in bank, are not obligations resting primarily on the general credit of the borrower. Corporation bonds, issued by railroads and other public utility corporations, which have increased so greatly in recent years, yield an income fixed in advance, and are secured usually by mortgage on the entire property of the corporation issuing them. (The income on some special kinds of "preferred stocks" is so certain as to make them for investors almost the same as bonds, but they are legally not loans, payable at a certain time, but are evidences of ownership.) Another large class of long-time loans are those made by national, state, and local governments. Tens of billions of dollars of public debts are now outstanding, held by private investors in every walk of life.

The contract in the case of each kind of these loans provides for a fixed term after which the borrower must repay or renew, and for a fixed rate on the nominal or par value of the loan. Nearly all the securities (bonds, certificates, evidences of indebtedness) are saleable at a market rate. The incomes are fixed, the selling price (or capital value) fluctuat-

ing above or below the nominal sum except just at the moment when the debt falls due.

§ 8. **Special markets for money loans.** The choice of timeliness is possible in a market along any one of many series of incomes, but in commercial circles trade in timeliness most commonly takes the form of money-loans. Let us see how this would appear. Let lender A offer some dollars at 10 per cent interest (or more); let borrower B be ready to borrow some dollars at 16 per cent (or any less). Then there is a motive for trade (omitting fractions) for a loan at any rate between 15 and 11, let us say 13 per cent. But this motive exists only with respect to certain marginal units of money, not without limits. A could not give up *all* his control over income during the year for 13 per cent for that would mean greater present deprivation than he chooses to make; B would not borrow much beyond a certain amount even at less than 13 per cent, for he would have to pay interest either for less urgent personal desires (consumption loans) or to get control of incomes which *to him* will yield a smaller surplus.[4]

If there are numerous competing would-be lenders and borrowers there is a true lending market. The various preference rates (each regarding successive dollars, viewed with relation to the marginal valuation) unite into hypothetical bidders' curves (as in the market for commodities, see Chapter 7) and a price results that establishes equilibrium between demand and offer.[5] So in a market all the individual bids

[4] If B (having good security to offer) should bid a very high rate of interest (say 20 per cent) either through bad judgment or because of a chance to buy under-capitalized goods (or incomes) it might induce A to sell his goods which involve a premium of, let us say, only 10 per cent, to lend the proceeds to B; A meantime could escape any deprivation by renting the goods he had sold, for a little more than half of the interest he is receiving. A is then not using fewer present goods but is temporarily taking advantage of a chance to substitute a more advantageous mode of purchasing both present and future incomes.

[5] This may be traced on figure 11, showing how various bids meet in

that are satisfied and enter into the making of the market-price are modified by trade; the urgent bidder (or bidders) on either side is included on the marginal principle, the units most easily spared being loaned, the units most urgently desired being borrowed. As in the market for objective commodities, so in the market for loans, the valuations of the various individuals within a certain range are thus brought into conformity with the market-price. The earlier isolated valuations cease to be actual; they are, as we look back at them, merely of historical interest, and as we look forward, are only hypothetical, being the rates at which preference *would* appear under other conditions than the present. (See Chapter 7, section 7.)

Under these conditions the price of loans (expressed as a rate of interest) has to the superficial view an appearance of independence, as if the market for loans were a thing apart from the existing premium involved in capitalization. But this loan market could not exist apart from an existing status of prices. Money borrowed to keep would indeed be barren of any income; it would even cease to be money.[6] The representative character of money makes a loan mean to the borrower the loan of whatever use-yielding, or whatever rent-bearing, agent can be bought with the amount of money borrowed; and makes it mean to the lender parting with the purchasing power to buy goods at their present prices. The loan market is meaningless and motiveless, if it be thought of as cut off from the existing system of prices (capitalization).

§ 9. Capitalization, the clue to the general interest rate.

a common price. The excluded lenders on the line to the right of the price point are those who hold their present dollars (or a part of them) rather than lend further at the market-rate of interest; the excluded buyers are those to whom further loans at the market will cost more than the expected increment in incomes.

[6] Of course cases occur where after the loan is made, the money is kept for a while awaiting a *better* time to buy the incomes which are to yield the increment of price.

In agreeing to pay interest at a certain rate, the borrower is obviously selling to the lender the right to collect a series of future money incomes including the return of the principal, and is in return buying a present sum of money. The principal is the result of capitalizing the incomes, so discounted that they will emerge at the rate of interest specified on the investment of capital. A thousand dollars at 5 per cent will yield an income of $50 a year until the principal is repaid. The loan is in perpetuity unless a date of payment is named. The form of the loan at interest plainly is that of the exchange of a larger (future) sum of money for a smaller (present) one. From ancient times this has seemed on the face of things a moral wrong to the borrower and an economic mystery, therefore an economic absurdity. "Money is barren," said Aristotle, and his thought is often echoed to-day in communistic arguments against the loan of money at interest. "The borrower pays interest and agrees to this unequal bargain because he is made to pay," is declared on the one side; "he pays because he can afford to pay," is answered from the other. Both statements may be right yet their very form indicates that the problem is looked upon as one of morality rather than of economics. The borrower doubtless would not make such an agreement unless he chose to do so; his choice, as every choice, may be thought of as due to economic pressure or to economic advantage, as a choice of evils or a choice of benefits. Why must he (can he be made to) pay interest if he is to get the loan? How can he afford to pay interest?

After the foregoing study of time-preference and capitalization we have not far to go to find the explanation of the contractual rate of interest at which incomes are yielded on money loans. No borrower would or could, for long, pay interest on money and let it lie in a chest. What does he do with it? He buys things. Everything he can buy has a price, is capitalized, and the explanation of the interest rate lies in the relation between the price of goods that present

money will buy, and the price of the series of incomes which those goods will afford up to the time of the repayment of the loan.

§ 10. **Time-series of incomes, monetary and non-monetary.** Before ever a money-loan was made, before even money had come into existence in the world, time-preference existed. It lies in the very nature of choice by animals and by savages. (See Chapter 20, section 2.) In many ways it is interwoven into the valuations of every self-sufficing economy in the days of barter. It becomes generalized as a prevailing rate in each individual's economy and as a price for timeliness in all exchanges of goods and uses of different time-periods. The rate becomes equalized as between different series of uses, as the rate of time-preference and of time-price can not consistently be greatly unequal within any circle where time-choice is possible.[7] The use of money in trade gave much greater exactness to this time-price as embodied in goods and to their prices in relation to the times of their use. To-day in the innumerable valuations of many business enterprises where there is no monetary borrowing and lending time-preference expresses itself in the capitalization (price) of the durative agents of the environment. Every loan of money (or of goods in terms of money) at interest therefore occurs where the price of goods already embodies this premium on the pres-

[7] This approximation to a common rate of yield on various investments may be illustrated by some such table as the following, showing the choices that present themselves to an investor.

Form of Investment	Present price	Yield in Money Terms. 1st yr.	2d yr.	3d yr.	4th yr.	In perpetuity	Rate of income
House and lot	$1,800	100	100	100	100	100	5.55%
Farm and buildings	5,000	250	250	250	250	250	5.00%
Horse	200	12	12	12	212	...	6.00%
Cow	100	15	15	10	81	...	6.00%
Agricultural products	1,000	1,070	...	...	...	...	7.00%
Dollars	1,000	50	50	50	50	50	5.00%

$100 capital invested will buy net incomes of as many dollars as the rate per cent.

ent possession. Indeed it is simply this which would give a borrower a motive for a new loan. Here are many different agents and many series of yields, the price of all of them expressed in terms of the money unit (let us say the dollar). The money prices involve the rate of premium on present valuations (and correspondingly a discount on future prices).

§ 11. **Present dollars and what they can buy.** A present dollar is purchasing power that gives possession of future incomes at discounted prices. The market would present itself something like the (greatly simplified) illustrative table. Whoever has a disposable dollar which he does not need or choose to use for present desires, may either buy something and hold it for the expected increase, or he may by the method of money loans lend it to another person to do the same. It matters not how the dollar happened to be disposable, whether it was stolen, or was received in payment for some other property, or is new savings from interest on other loans, or from wages, etc.; in any case the dollar gets its power of earning interest from this prevailing discount on the future, involved in prices. Because of this fact the owner of a dollar possesses an economic power which he can assign by contract to a borrower. Interest then might be described as the price paid by a borrower for the right to buy goods at discounted prices. Money is a generalized present good, and when loaned at interest is exchanged for the promise of future goods at a ratio reflecting prevailing capitalization.

§ 12. **Blending of the investment premiums into a common rate.** Now given the existence of these parallel series of time-prices in different lines of agents and products, it follows that they must, so far as exchange takes place among men, tend to embody a common rate. Aside from differences in the difficulty of keeping, ease of management, etc., all these series must, by the law of substitution, be leveled toward a common rate of income. This would include money also, for in its function as a medium of exchange, money will be spent

always for the thing which at the moment has the highest value. In the hands of an investor buying money incomes, the money will be spent in the way to buy (other things equal, trouble, risk, etc.) the largest net income. Therefore, the bidding of investors for whichever income is offered at the lowest capitalization tends to level (up or down) the investment-power of a dollar in all the options of present goods offered. The different choices blend, in a variety of ways, into the common rate of which the interest rate is the superficial expression. As happens in the exchange of commodities, the individual valuations vary from the market-price—as a result of different circumstances of age, health, ability for business and liking for it, particular tastes inclining to this or that business, etc. This variation of values from market-price leads men to become borrowers or lenders, in this or that line of investment. The individual takes the market-rate as a fact, and adjusts his own conduct to it.[8] Money being at the same time the medium of exchange, the common denominator of prices and the standard of deferred payments, is the unit in which all these valuations are expressed. In one form preëminently, the interest contract, the rate of time-preference comes to a definite arithmetic expression. The rate of interest sometimes appears to be the determining factor, whereas it is but the reflection of the choice of timeliness in the whole economic situation.

§ 13. **Indicative nature of the interest rate.** We have now before us the broad outlines of the theories of time-value, of capitalization, and of the rate of interest on money-loans. We understand how these are but aspects of the same problem, and how the market-rate of interest (after due allowance for risk and other deductions) registers a prevailing price for timeliness, which pervades the whole economic structure of society. Money is the unit in which capital and interest are expressed, but money is no more their cause than the hands of the clock are the cause of the time of day. And the rate

[8] This aspect of the case is given further attention in ch. 27, sec. 7, 8.

of interest is no more the cause of time-preference than the shadow on the sun dial is the cause of the rotation of the earth on its axis. The interest-rate is but an index of the ratio inherent in the equilibrium of psychological forces, desires for present and future incomes; that is, time-preference. A change in the mental habits, in regard to this choice, on the part of any considerable number of men, must change the general distribution in time of the entire series of incomes under the control of men, collectively. Future incomes are maintained only through the constant exercise of the faculty of abstinence. This conserving and dynamic influence of abstinence we shall study further in Chapter 38.

PART V

ENTERPRISE AND PROFIT

CHAPTER 26

ENTERPRISE

§ 1. Factors of production must be combined. § 2. Non-contractual and contractual incomes. § 3. From small shop to large factory. § 4. The residual share. § 5. The typical owner-manager. § 6. Empirical methods of estimating and apportioning the residual share. § 7. Utmost possible degree of separation of investment and management. § 8. Corporations and their control. § 9. Single investment function of minority stockholders.

§ 1. **Factors of production must be combined.** Every separate thing that enters into the making of goods is called an economic agent; as in agriculture, the seeds, plows, fields, fences, barns, cattle, and labor; in manufacture, the buildings, machines, material, labor, etc. But these numerous agents fall into two great groups called factors of production, variously named as man and nature, labor and material agents, or humanity and wealth. We have studied separately the processes by which value is attributed to these agents, yet we have borne in mind always that they are complementary agents and complementary factors. (See Chapter 18, section 10, and Chapter 19, section 14.) Labor in a void and wealth without labor would be equally useless. The process of valuing uses of goods and services of labor goes on while all of these goods help make up the situation in which the desires exist.

The stock of economic goods of whatever sort is limited, while the upspringing desires are practically unlimited. To increase goods, labor is applied to material objects. Man's part in production is almost passive when goods come into existence without his effort. One can imagine the indolent savage of the tropics, lying under the banana-tree, letting the

fruit drop into his mouth. But at least he must be there ready for it to drop. One can conceive of a tribe living on natural fruits, where every day the people awoke to find the various kinds of food provided, like manna, at each person's hand. Tho the existing amounts were secured without effort, nevertheless any differences in flavor would cause differences in value to arise and trade to take place. Now there is something analogous to that in daily experience. There are some goods which effort can do little to increase. Usually, however, there is a possibility of change and adaptation to make them better suited to needs, and there is required the use of intelligence to choose among the goods and to employ them in the best way. Further, man can intervene and direct the course of industry; he does not merely gather what is provided. It is this active intervention and effort that is here to be considered.

§ 2. **Non-contractual and contractual incomes.** It is from this process of combining the factors that the various yields and incomes emerge which have been heretofore treated. The various laborers and kinds of wealth when brought together produce goods and the values attributable respectively to the various agents are their yields. The various persons to whom the yields accrue are said to secure incomes out of these yields. The incomes are of two kinds.

(1) A non-contractual (impersonal or "economic") income is obtained from the yield of the agents, not from another person to whom the agent has been rented or loaned. The laborer gets an economic income from his labor when he gathers wood for his own fire, or builds a house for himself. Wealth yields an economic income to its owner, as the products of the field, the use of (or the objects made with) the tools of the craftsman. Direct labor-incomes and the usances of wealth appear first as economic incomes. This is the only kind of income possible on Crusoe's Island and in any non-exchanging economy.

(2) A derivative kind of income appears as soon as men

begin to hire labor and borrow the uses of wealth. A contractual income is one received from a person for the right to receive an economic income. For example, the carpenter building a house for another man does not possess the economic yield of his own labor as it is performed. That belongs to the owner of the materials from whom the carpenter gets a contractual income. All wages and rents (as we use the terms) are contractual incomes.

To cases that appear puzzling to classify this test may be easily applied. In whom is the legal title of a use or of a service vested at the instant it is yielded? To him belongs, in first instance, the economic income, subject to the claims of others who must look to him for their pay. Thus the owner of the factory owns the product altho he may have to pay rent to a landlord and wages to his workmen.

People thus are of two classes as regards the mode of receiving income: *self-employed,* earning economic labor-incomes; and *employed,* receiving (contractual) wages from active capitalists. Capitalists are of two classes: the *active capitalists,* risk-takers, getting non-contractual capital-incomes, whom we shall call *enterprisers;* and the *passive capitalists,* risk-limiters, getting contractual incomes from active capitalists. The self-employed laborer is in every case to some slight degree an active capitalist. The neediest fisherman must have title to the string of fish before he sells it to change it for a money income. Every economic product that endures an instant, rests in the hands of an active capitalist.

§ 3. **From small shop to large factory.** Some examples applying these terms may make the matter clearer. A furniture-maker (a joiner) in a village owns his little shop, the land on which it stands, his tools, some lumber, and a few pieces of finished goods. From day to day he sells the ready furniture, or takes orders for which he receives money or lumber or articles of food and other supplies for his own household use. If with his money and goods he can pay for the materials he needs and have left a living for himself,

his income of goods is the combined result of his labor and of his capital (that is, of his right to the uses of his shop, tools, and stock of goods). He is enterpriser, manager, and laborer, all in one, and gets one non-contractual income, which as to its value is imputable to several different economic sources. Now this man takes an apprentice or two, hires two or three workmen to keep up with the increasing orders, hires another shop next door for which he pays rent, and borrows some money to buy new tools and more materials so that he can keep a larger stock of ready goods. Less of his time is given to handwork and more to meeting customers, making new designs and patterns, hiring and directing his assistants, buying materials, and keeping his accounts. As the business grows he finds he must employ salesmen to meet customers, a foreman to direct the workmen in the shop, a bookkeeper to relieve him of the mere clerical labors, perhaps finally a special artistic designer and pattern maker. At length there remain for him to do only the larger planning of the business as a whole, the hiring of his subordinates, and the general oversight and criticism of all departments so that everything may be kept smoothly working.

§ 4. **The residual share.** From the moment the first apprentice was hired or the first dollar was borrowed, the business became the source of a contractual income to some one, and, at last, of many contractual incomes, besides the one non-contractual income of the active enterpriser. These contractual incomes have the familiar price-names of wages (and in special cases, salaries), rents, and interest. The non-contractual income let us call profits, postponing for a time the more exact definition of the term. Before the owner can count his profits at the end of the year he must pay the agreed price of services and usances, wages to his apprentices, workmen, salesmen, bookkeepers, foremen, designers, etc., rent to the owner of the building or of hired machinery, interest to the lender of money or to the seller of lumber, supplies, etc. The contractual incomes of these other persons are prices, ex-

pressed in money-terms and paid by the enterpriser; his non-contractual income is what money and other goods he has taken out for his own use in that period, plus the net capital remaining that has accrued within the year. In the rare case where the business is bought at the beginning of the year, and is sold at the end, at a definite price, the difference (plus the amount meantime taken out) would exactly express the money income. But in a growing business the active capitalist's income can only be estimated, by taking careful invoices of all property at the beginning and at the end of the year, making allowances for needed repairs and for depreciation, counting outstanding debts and credits, amounts taken out for the owner's use, etc., and finding the resulting net excess of capital-value at the end of the year. This balance, if there be any, is the composite income of the owner, who is at the same time manager, and it contains whatever is to be attributed to his own services and to his invested capital of whatever sort. Viewing all the incomes in a legal light, this is the one *residual* income—it is what remains to the owner after paying all claims against the business. As a matter of bookkeeping also this is the one residual income, being the arithmetic remainder after subtracting from the total value of the products added in the course of the year to the capital, the total outlay (attributable to that year) which includes all of the contractual incomes due.[1]

[1] It must not be thought, however, that viewed as a value-problem, as a question of logic, this share is a mere residual. That is, it must not be thought that all the other contractual shares (wages, rents, etc.) are determined prior to, and independent of, this share of the active capitalist, who takes what is left without having had any choice in the matter. That would be so if he could do nothing whatever about readjusting and rearranging his investments. The various contractual incomes are determined in an economic equilibrium of which the *prospect* of active capitalists getting a more or less definitely estimated minimum return is an essential part. The expectation of income has guided the enterpriser's choice of a business just as it guides the laborers (see ch. 18, sec. 3). For this particular year and business

§ 5. **The typical owner-manager.** This union of the function of business manager with that of active investor was at one time well-nigh universal, and it is still common in smaller enterprises. As applied to a small business this organization has the advantage of uniting in one person the one who is most concerned as to the financial outcome and the one whose judgment, energy, and care most largely determines the result. It unites responsibility and power. This plan still obtains generally in agriculture. In the United States in 1910 there were 6,300,000 farms of which 62 per cent were cultivated by the owners, 1 per cent by managers, and 37 per cent by tenants (which implies nearly always a large measure of oversight by the owner). A large proportion of the smaller factories are run in this way by an owner who started the business, or who has succeeded his father, or who, beginning as an apprentice, has advanced step by step in an older factory, getting first a share, and at last becoming head of the establishment. This plan prevails also in the great majority of retail stores and in many wholesale stores. A boy, going into a store, works up to a clerkship, and winning promotion step by step, gets a larger and larger share of the ownership and becomes the chief executive in the business.

§ 6. **Empirical methods of estimating and apportioning the residual share.** While management and ownership are thus united in one person or in one family, the attributing of the shares due to the personal labors of the management and to the investment is very imperfectly done. Indeed in a small business no effort is made to do so except in a vague and incidental way. (See Chapter 18, section 10.) The simple furniture-maker chose his trade primarily because of the labor-income it would yield—tho the need of tools and some investment in materials enters in some measure into the decision, as a burden (cost) incident to the trade, keeping some

this kind of share is an arithmetic residual, but year in and year out it is as much subject to adjustment by investors' valuations as is any other share. (Of this, more below, under cost of production, p. 346 ff.)

men out, and causing others to drop out when they can not keep up their equipment. But when the capital investment in shop, tools, materials, and stock is considerable, it comes to be estimated by comparison with alternative contractual incomes. A shopkeeper who clears $1000 in the year, seeing that he could sell out for $4000 and lend the sum for 5 per cent, counts "a fair return" on his investment as approximately $200 and his services at $800 a year; or having reason to think that he could not get a position working for an employer that would give him more than $700, counts his capital-income as $300, or 7½ per cent; or having an offer of a good permanent position at $900, counts that he is making but $100 on his capital, which is but 2½ per cent of what some one will pay him for it. Even in this case, either the greater independence of being his own master or the prospect of better business may deter him from making the change. It is well known that many small owner-managers both in handicrafts and in agriculture make no more, or even less, than "hired man's wages."

§ 7. **Utmost possible degree of separation of investment and management.** In the case of a growing business (such as that of the furniture-maker, section 3), as the owner-manager transfers one duty after another to an employee, the wage (or salary) paid becomes a part of the definite costs of the business. If his own labor is freed for more important things his final residuum will be greater. He can, however, transfer one duty after another to others without taking upon himself other tasks. Taking now the case of one who is already the owner of an establishment, consider what is the farthest point to which it would be possible to carry this differentiation of ownership (investment) and management. It can go to the point where the only task of management remaining to the owner is the appointment (and removal) of the general manager, all other matters being left to the appointee.

§ 8. **Corporations and their control.** Rarely when there

is a single owner does he so completely divest himself of the managing function. But ownership and management are more nearly and more often separated when the organization is that of a stock company, or corporation, the ownership of which is divided among the holders of shares of stock, or certificates of membership. Many corporations have been organized by the successful single owner (or by partners, or by a family) as a method of enlarging the business, or of selling

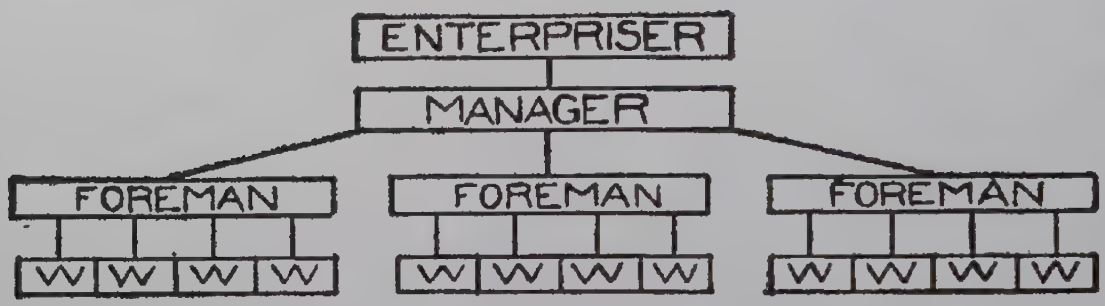


FIG. 38. MILITARY, OR LINE, ORGANIZATION.*

* The separation of enterprise and management may be seen in this simple type of organization. The enterpriser (a person or group of persons) selects the manager, who in turn appoints his subordinates. Each person in the organization receives directions from one immediate superior.

all or part of it, when the owner wished to retire, or to reduce his responsibilities with advancing years or with failing health. It is often difficult to find one buyer willing to invest the capital needed to acquire a large established business, whereas many persons are ready each to put in small sums if there is outlook for good returns. They are especially attracted either to an established business having reputation ("good will") and a record of yielding good incomes, or to a new business in which the prime movers and investors are men of known ability and success.

Advantage is taken of this fact by active business men, in fair and in unfair ways, and throughout the nineteenth century the corporate organization proved to be best fitted to attract large amounts of capital for the great industrial, mercantile, and transportation enterprises. Usually these corporations were organized by and around some one man or

group of men, who either actually paid for stock, or issued it to themselves in payment for the promotion of the undertaking, retaining thus a majority of the voting power for themselves (each share having one vote). One share over half is the utmost needed for "control," and when the holdings are scattered in small amounts among stockholders, a very much smaller proportion is enough—sometimes as little as 5 per cent. The control may give the power to one man to elect himself to be president or general manager with power to fix his own salary and to appoint the other employees, and to control much in the way he could if absolute owner.

The capital-income from the stock he owns may be of slight importance to him compared with the control. There have been many ways in which the control of an industrial or transportation corporation gave opportunities, increasing with the size of the enterprise, for the man in control and his friends, to get large additional incomes. Many of these ways were plainly illegal, others unquestionably unfair, and still others in the debatable border zone of morality. These make up a large part of the so-called "corporation problem." It is not the place here to discuss that; we wish merely to show the nature of the incomes arising under corporate organization.

§ 9. **Single investment function of minority stockholders.** A minority stockholder who practically has no option but to vote for the officers nominated by the group in control, has in investing but one decision to make: whether to risk his capital in that enterprise managed by that group of men. The only corporations that attract large numbers of minority stockholders are such as for a number of years have paid regular dividends, have followed a pretty definite, well-understood policy, and have in large measure gained and deserved confidence. The Pennsylvania and the New York Central may be named as examples among railroads, whereas the New Haven, which up to about 1910 was in the same class, showed how swift and how great may be the losses inflicted upon

minority stockholders as a result of a change of policy by those in control.

The minority stockholder, while he may have no voice practically in electing the management, nevertheless in his investment bears his full share of the risk of financial loss (indeed, he bears even more than his due fractional share of risk). The stockholders collectively make the initial investment, that which bears the main burden of the financial risk (not all, for the other contractual income-receivers are not absolutely secure), and they receive their non-contractual income as a legally residual share after all other outlays have been made.

Thus it appears from the foregoing survey that the peculiar function of enterprise is investment and ownership. In many cases still to-day, the functions of enterprise and of management are united in one person, who thus obtains an income that is a complex of an investment profit and a labor-income. In other cases, however, the management function is delegated to an employee, the hired manager, in which case the enterprise and the management functions are more clearly distinct because exercised by different persons. It is our task next to study more closely the function of management.

CHAPTER 27

MANAGEMENT

§ 1. The function of management. § 2. Direction of simple and interrelated groups. § 3. Selection of managed and of managers. § 4. Division of labor in management. § 5. A large commercial policy. § 6. Obtaining of capital. § 7. Profit-seeking borrowers and the rate of interest. § 8. Buying materials and labor. § 9. Various policies to upbuild the personnel. § 10. Management of technical processes. § 11. Management of men. § 12. The right proportioning of the factors. § 13. Adjustment of production to changing conditions.

§ 1. **The function of management.** The owner of a fund of purchasing power can not leave it to invest itself. The primary function of enterprise is the choice of a business in which to invest; the next, and essentially last function, is to provide competent management. Every act of labor and every use of goods calls for some decision and direction. This is management, which is one of the forms and aspects of labor, quite easily distinguishable from mere physical action. In the simplest kinds of individual production the amount and quality of the goods obtained depend on intelligent choice often far more than on physical force. Even for the solitary worker the choice of the right time, kind, place, and method of work is most important. The first thing Robinson Crusoe did was to go to the ship and to save as much as possible of the cargo before it was dashed to pieces by the waves. If he had begun first to till the soil to provide a future supply of food it would have shown foresight, but very poor judgment. Every moment of delay in recovering the cargo of the wrecked vessel cost him many useful materials. The humblest farmer has a great range of choice and a need of

good judgment in fixing the time to sow, to reap, to do each simple task. There is the same need to-day for small producers of all kinds, whether shopkeepers or blacksmiths, to make wise choice of time in the use of their own labor. There is also a wide range of choice in the distributing and combining of labor, agents, and materials. A limited supply of agents can be used to secure a variety of goods, more or less desirable. There is a choice in ways and methods by which a thing may be done. There are many wrong ways, there is but one best way, at any stage of industrial progress. While most work is done in customary ways and little independent judgment is required, yet in every kind of industry new problems constantly arise and call for the exercise of choice as to methods. Moral qualities are continually called for, such as control of impulse and the giving up of the comfort of the moment. The wisdom of our fathers is embodied in a multitude of proverbs that suggest the wise course. Men must "make hay while the sun shines," and "plow deep while sluggards sleep." But virtue fails less often from lack of knowledge than from lack of will. As men differ in judgment, character, and will-power, their products differ, even in the simplest circumstances. The ability to choose and to do wisely is an element in personal skill in every economic activity. This quality in the man is managing ability, and the action of directing economic activity is business management.

§ 2. **Direction of simple and of interrelated groups.** When men work in an associated group, the direction of effort becomes relatively more important. The first and simplest advantage of association is working in unison. Men unite their muscular efforts for a single task, and accomplish what is impossible to them working singly. There must, however, be a foreman to call out "heave ho," or to lead the song, or to set the stroke for the oarsmen. When many are working together, good judgment in the selection of time and way yields larger results and a mistake wastes more materials and agents than when each works for himself. If association is

to yield its advantages, it must go further than working in unison at a single task; there must be division of labor, hence harmony of effort, hence agreement and direction within the industry. While the gain of well-directed association is large, the waste of ill-directed effort is greater when specialization has taken place, than with isolated workers. Most communal societies have failed because of the lack of a good head. The few exceptional successes have been due to the presence of a man of superior ability, such as George Rapp of the Harmonist Community, who, had he lived in this day, could have easily become the head of a great business corporation.

When various industrial groups are associated, direction becomes still more important and the need grows for high ability to manage and direct the great units of industry. In the single group it is an internal harmony alone that is needed. The work of a dozen men must be so arranged that each is in his fitting place. But as this group comes into contact with others, the relationship becomes twofold, and there must be both internal and external harmony. Outlook upon business conditions and commercial ability become necessary. The more complex the economic organization of society, the greater the chance of mistake and the more injurious are the mistakes to a wide range of interests. Large amounts of wealth and labor can be rapidly lost through lack of wise direction of an associated group.

§ 3. **Selection of managed and of managers.** Ever since the beginning of human society some degree of organization of industry has existed. In every community by some method, however crude, a practical way has been found of determining who shall organize and manage the factors of production, and who shall work under direction. Economic organization has always been more or less connected with and affected by political organization, and in many ages has had a distinctly political character through the institutions of slavery, serfdom, caste, and heredity in politics. But in modern times, under conditions of political freedom, this classi-

fying of men so that those less capable of managing industry come under the direction of those who on the whole are more capable, has grown more and more economic and competitive. This selection is often unsatisfactorily done no doubt, through the quips of chance and through many influences of personal favor and political injustice. In most cases, however, the selection is of a very exact and effective sort. The need of organizing industrial forces is so great that any method that works at all is better than no method. The man who shovels dirt must do it at the right time and place if, in this complex society, it is to count for something and give the effort value. If he can not choose well for himself, he comes under direction. The average man can not decide nearly as well here as he could on a desert island where and when to put in his spade. There it would be to raise food for the current year; here it may be to dig a canal or a tunnel whose uses will not become actual for many years. The more distant the end sought, the more difficult is the choice. To every worker, according to his personal skill, is left some degree of choice in the method of his work, but in a large part of industry the range of choice is very narrow. The man with the shovel and the man with the hoe come under direction.

Likewise there is a constant process of selecting and advancing the efficient managers. There is, to be sure, an element of chance in this selection. The process in general is a rude one. Accidents and unforeseen changes, industrial crises, failure of health at a critical moment, fraud and crime, may defeat men of ability and they may never regain their foothold. Men that have worked their way up from the ranks bequeath their business positions to their sons and grandsons. Lack of experience may lead to disaster a naturally able but youthful heir, too suddenly burdened with the responsibilities of a business. On the other hand, men of limited ability may inherit fortunes and preserve them by caution, without much energy or ability. Often they retain the investment while delegating the management to more

capable hands. It is not always true, even in America, that "it is but three generations from shirt-sleeves to shirt-sleeves," altho many fortunes slip away from the sons of rich fathers. In general, success in retaining either the control or the active management of a business is an evidence of considerable ability. By loss of fortune unwisely risked, through unforeseen changes in methods, and after manifold blunders, the less capable drop out. Thus, by the ceaseless working of competition, the higher places are taken by those fairly capable of filling them, and the efficiency of the management of business as a whole is maintained or increased.

§ 4. **Division of labor in management.** The management of industry does not usually show itself in entirely simple forms. The directing power in an establishment is not always exercised by one person, but usually by a number of persons. When there is a single owner, he most often is the manager. (See Chapter 26.) There is a virtue in this union of financial responsibility with practical control that favors its survival despite various limitations. But men are constantly failing in health, advancing in years, or becoming unfitted to meet new conditions after acquiring fixed habits of business. Partnerships often are formed by an older man taking into the business a younger man who might assume duties of active management. Yet the frequent difficulty of partnerships is an old story. "We went into partnership. I supplied the money and he supplied the experience. When we quit he had the money and I had the experience."

Some minor functions of direction must be given to foremen when there are even a few employees; in larger establishments the men are constantly being tested and promoted to higher positions, becoming partners, or, in a corporation, officials. The "indoor man" and the "outdoor man" are clearly marked types. Many a man succeeds admirably in minor tasks of direction, but has his limitations whether due to natural endowment or to defects of education. A man may have just the qualities fitting him to manage a small gang of

men whom he can see, know, and direct personally, but be unable to succeed where some power of imagination and some ability at constructive planning is required. A good departmental head may be a poor general manager.

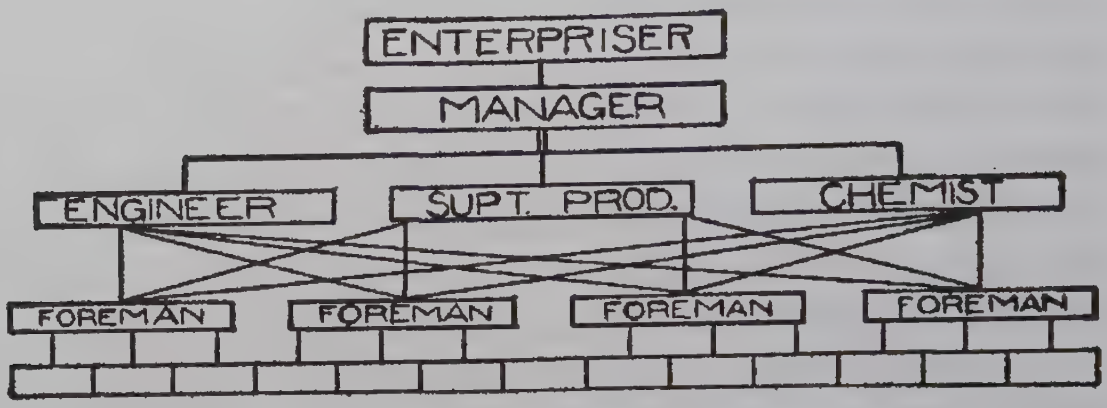


FIG. 39. FUNCTIONAL OR STAFF ORGANIZATION.*

* Division of labor and specialization in management may be by some such plan as is here graphically shown. The foreman may receive directions regarding the machines and their operation from an engineer, regarding special chemical processes from an industrial chemist, and regarding other matters from the superintendent of production. A modification of this plan is shown below in fig. 40.

§ 5. **A large commercial policy.** The highest function of the management, that which properly is performed by the chief of the organization, is to form the general commercial policy of the enterprise. Every active investment is made in some generally predetermined line—it is merchandise, agriculture, manufacture, transportation, etc., and more specifically is wholesale stationery, general farming, iron making, teaming, etc. From the moment the general investment is made the management begins to exercise the power delegated by the enterpriser, investing and reinvesting, shaping and reshaping the business in accordance with a continuous policy. In a degree varying with the kind and size of the business, demand must be anticipated. The trend of changing fashion, in engineering as well as in dress, the shifting of demand for products, must be foreseen and prepared for not too rashly or too cautiously. The process in every kind of undertaking, that of buying and selling, as well as that of manufacturing,

requires time. Materials and labor are to be embarked in directions from which they can not be recalled. The widening or narrowing of the scope of the enterprise (as to variety of goods, extent of the market sought, etc.) and the enlargement or reduction of the size of the plant, are decisions wisely made only by a mind with a large business outlook. The larger

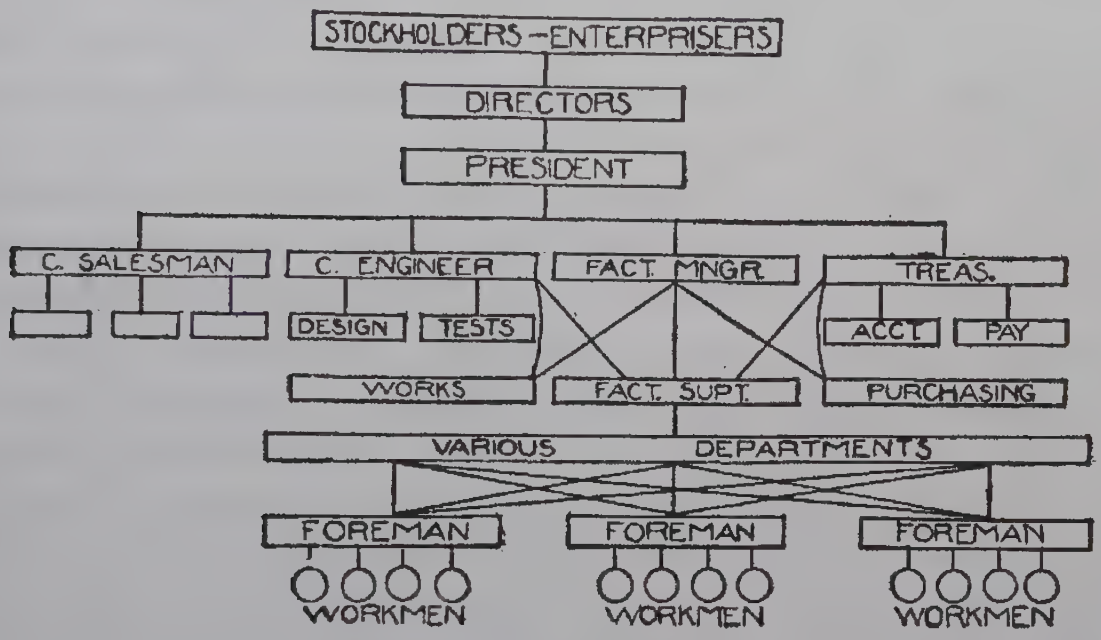


FIG. 40. MODIFIED FUNCTIONAL ORGANIZATION.*

* This is an attempt in large enterprises to unite the benefits of specialization with directness and unity of responsibility. The president is responsible for the larger policies, and to him are responsible directly such officials as treasurer, chief salesman, chief engineer, and factory manager. By the work of committees and conferences the various functions and departments are brought into coöperation as far as is necessary and practicable, and the eye of the specialist is on every part and process of the business.

the investment and the more complex and distant the factors, the greater is the difference of loss or of gain made by the manager's judgment. The man who has the ability to do this exceptionally well in the largest business merits the title of a "captain of industry." He is not a mere employee of investors, but a prominent personality, whom investors follow, eager to assume the financial risk under such leadership.[1]

1 Among the men receiving salaries of $100,000 a year or more in the United States in 1914 were the following: Pope Yeatman, ex-

A special type of manager is the promoter, who makes a plan of enterprise and tries to interest men of capital to invest in it actively. The promotion may be either of a new enterprise of a competitive nature, or of a combination to create a monopoly out of existing enterprises. The latter is the case of promotion most frequently spoken of, and it may be discussed with the trust problem. The promoter as such is a manager in the initial stage of the enterprise only. He is the moving spirit who offers his services to the investors, who are to perform the enterprise function.

§ 6. **Obtaining of capital.** The conduct of any business may be thought of as consisting of three parts, or processes: (1) buying, (2) alteration (i.e., recombination, elaboration, change in form, place, and time), (3) selling. These are continuous until the last sale is made and the whole business is ended. Buying and selling make up nearly all of mercantile business, alteration being subordinate; whereas alteration is the most striking feature of manufacturing, in which buying and selling appear (often mistakenly) to be quite unimportant.

Almost every business to-day requires from time to time additions of capital, temporary or permanent. Frequent use must be made of credit. The confidence and support of lenders, whether banks, trust companies, individual shareholders, or investors in bonds, must be secured by the management.

pert mining engineer for the Guggenheims; Theodore P. Shonts, civil engineer, president of the Interborough Metropolitan Co., in control of the great rapid transit system of New York City; Theodore N. Vail, president of American Telephone and Telegraph Co. (the Bell telephone); Lewis E. Pierson, banker, president of the Irving Exchange National Bank, New York; Samuel Insull, president of the Commonwealth Edison Company, which controls nearly the whole electric system in Chicago; William M. Wood, president of the American Woolen Company, owning forty mills; and David W. Griffith, manager of the Mutual Film Corporation, of Los Angeles, manufacturers of moving pictures. See articles on $100,000 salaries, in *McClure's*, April to October, 1914, by E. M. Woolley.

Good judgment of the money market often is as vital as judgment of the market for the particular product. In some of the largest corporate enterprises this quality becomes the most essential, so that financial "influence," consisting of personal or official relations with large financial institutions, comes to outweigh in importance most other qualities of management. This is in part the explanation both of the growth and of the evil of "interlocking directorates." A similar power to get special privileges and opportunities from national, state, and city legislatures, in the form of favoring tariffs or of public franchises, is important for the success of some business enterprises, and this often fosters an evil conspiracy between bad politics and big business.

§ 7. **Profit-seeking borrowers and the rate of interest.** The enterpriser (and his agent, the manager) is essentially a profit-seeking (so-called productive) borrower. He does not borrow in order to enjoy more in the present in exchange for the future. He borrows to earn more in the present, to spend when he pleases, which may or may not be now. The money which he borrows to invest in business he uses to get better machinery or a larger stock, with which to secure a better or a larger product. The product finally being sold at a profit, the enterpriser is at a point where he can spend without encroaching upon his capital. The consumer of the product pays (or is expected to pay) the interest included in the price, and the final consumer's payment for enjoyment must be deemed the logical source of the money interest. The business loan is made in view of the rate of interest, of the market-price of the goods in which the loan will be reinvested, and of the probable chances for earning profits in the business.

Evidently the price of these goods, to control which is the real object of the loan, is a general market-price reflection of their earning power. It is merely the sum of the expected prices they will yield, capitalized at the prevailing rate of time-premium. But earning power in whose hands? Not in everybody's, for the price of the factors can be recovered in

the price of the product only when they are applied to certain uses. Whoever buys anything to use and sell again, is venturing his judgment that he can make at least as much in the future as the market-price reflects, and possibly more. The borrower expects either to make these particular goods earn incomes larger than those on the basis of which they have been capitalized, or to transfer them to an economy where goods are capitalized at a higher rate than he is paying. The income yielded by these goods, if the borrower's expectation is fulfilled, is but the difference between present and future prices that has been wrapped up in their capitalization. As time elapses and the incomes emerge in wisely chosen investments, the borrower has a surplus large enough to pay the contract interest. It appears, therefore, that the motive of the borrower is to get control of future incomes, at prices that already involve, in their capitalization, a discount of the future uses, as he sees them, somewhat greater than the interest he contracts to pay.

§ 8. **Buying materials and labor.** The large classes of goods which are to be bought are equipment, materials, and labor. In the main the prices of these things are determined by impersonal forces and can be only slightly modified by a particular buyer. This is especially true in the case of many staple goods. The manager can but look upon the price of these materials as fixed, and seek to combine them as economically as possible into other products. But there are many special patterns and qualities which have no true market-price. By close attention, good judgment, skilful bargaining, one man may be able to buy slightly cheaper than his competitors, and thus have an advantage over them at the outset. When he does this, it is usually by searching out a better market in which to buy, buying at a better time, and judging better than his competitors the quality of the goods.

Failure to have merchandise in stock when called for, and every needed material in stock to fill orders in manufacture, is an occasion of great loss. On the other hand, keeping more

than is needed is a useless cost. The ability to buy cheap depends largely on being able to use a large quantity, sparing the seller in this way certain usual costs, and reducing the costs of transportation by economies in large shipments. But buying more than can be used within a short time causes costs for storing, insuring, etc., loss by deterioration, and loss of interest on the investment. Finding the golden mean—just enough and not too much—is one of the arts of business management, and requires a good organization of the purchasing department, and constant watchfulness both in mercantile and in manufacturing business.

Not the least important factor to be bought is labor of every grade. The more successful business men are not found usually paying less than their competitors for the various grades of workers. Success is due rather to utilizing the services so as to make them more effective. The chief executive of a large business must have a knowledge of men, ability to judge of human nature, to select his subordinates, and to animate them with his own purposes and plans. Andrew Carnegie has said that an appropriate epitaph for himself would be, "He was a man who knew how to surround himself with men abler than he was himself." This seems too modest; but in a sense it is not, because he claims for himself, and justly, the highest of all industrial qualities. A great administrator in political or industrial affairs can dispense with everything else rather than with this, the supreme, quality of the great executive.

§ 9. **Various policies to upbuild the personnel.** Different policies for developing the personnel of an organization are followed in different enterprises. In some there is "inbreeding," always promoting from those in the establishment; in others this policy is followed in the case of all minor places, but higher positions are filled by getting "new blood" from outside; in others, the best man is chosen wherever he may be found. There are advantages in each plan and corresponding disadvantages. In general a small organization needs to

look outside for new blood, and a large organization can more safely fill its higher positions from its own staff.

Favoritism in appointments very quickly causes the degeneration of the management of any organization. The inferiority of public industry must be largely attributed to political favoritism, involving the spoils system with its usual accompaniment, insecurity of tenure. Every government, national, state, city, and county, has a good many business matters to attend to. In Germany, where the municipal governments have been such models of efficiency, the policy in engaging managerial ability is much like that of good corporate business in America. The mayor is a professional business manager, who prepares for the work as he would for medicine or for engineering. A city employs a mayor who has had experience and has shown success in the administration of a smaller city in any part of the empire. A beginning has been made in America in calling men from other states, to serve as municipal experts or to be heads of some state enterprises, commissions, and institutions (such as public school system, state university, prisons, philanthropies, etc.), and this use of the merit system is extending in the national service of health, forestry, irrigation, etc. This policy must develop if the public service is to become efficient.

Private business is not immune to the disease of favoritism, which in some of the railroads and of the industrial corporations is a serious hindrance to efficient operation. It is said that in some parts of the country getting even a minor position on a railroad depends upon having a "pull" with an official; directors provide their poor relations jobs as brakemen and conductors. The efficiency of American railroads in general, however, is doubtless due in large part to the wide open market for talent in management. A good shop foreman or a good master mechanic in any part of the country may hope to get a better position either on that road or on another. And to make a success as a division-superintendent or as president on a small road is to become a possible candidate for a larger

superintendency, or for a vice-presidency or for the presidency of one of the larger systems.

§ 10. **Management of technical processes.** The management, directly or by the aid of other employees, must choose the general processes to be used, the kinds of machinery, the order and arrangement of it, the kinds of materials, and the various technical processes, chemical and mechanical, by which these are to be manipulated. The factors bought—equipment, materials and labor—are to be skilfully and economically combined to secure a product worth more than it cost. Indeed, the very buying of them in certain quantities and of certain qualities implies and requires a decision more or less exact, as to how they will be used. For the performance of this task of combining the factors the management must have, somewhere in the personnel, adequate technical knowledge of methods, processes, and materials, and experience in the art of applying the knowledge. In small undertakings, the owner-manager must personally embody these qualities, but in more complex organizations the chief executive may do without all but the broadest knowledge and ability to judge of the results of different processes, and to compare different plans. The technical knowledge of details must be supplied by numerous specialists, working under his direction—engineers, draftsmen, pattern-makers, chemists, mechanics, efficiency-experts, cost-accountants, etc.

§ 11. **Management of men.** The management must also choose and direct the corps of workers. Workmen must be selected with a due degree of skill, but not of a grade of skill, and therefore of wage, higher than is needed for the task. In a small business a manager's tact in handling men is one of the most important qualities, and, as the organization grows, foremen with managing tact must be hired. In one, it is a genial manner that wins the affection of the men; a sense of humor and ability to turn a joke smooths many a difficulty and is said to have obviated many a strike. In another, a dignified but sympathetic attitude toward the men is equally effective.

Not infrequently after a new superintendent, experienced and capable in mechanical matters, has taken charge of a large shop, the use of materials increases, the output falls off, and a strike follows. The explanation in such cases usually is that the new manager mistakes a smooth working, efficient organization for a slow moving one. It does not rattle and creak as he thinks it ought, and he begins to prod and irritate the men. The reverse may happen, when a new manager coming into a difficult situation replaces discord with harmony, increases wages per man but reduces greatly the cost per piece, and then has a continual struggle to convince his superiors in authority that he is not making it too easy for the men at the expense of the company. Of late it has been more and more clearly recognized that emphasis had been laid too exclusively upon the manipulation of machinery and material as a means of attaining efficiency in production. The rapid growth of large industry under corporations, separating the men from those in authority, has helped to bring this about. It is now seen that the management of the human material is just as much a part of technical efficiency as is engineering science or skill in the technical arts.

§ 12. **The right proportioning of the factors.** The right proportioning and skilful substitution of the factors is a delicate technical task for the management. The enterpriser must constantly study the question whether the application of another unit of any one factor at the price will, following the principle of proportionality, add to value of the product as much or more than the cost. This calculation is made for every one of the minor factors entering into the business, and for the business as a whole. The proper proportion varies at different prices, or costs. If wages rise, "it pays" to get machinery; if wages fall, it pays to let some of the machinery deteriorate and to do more by hand-labor. Likewise there is constant substitution of the various materials. The right proportions change constantly with inventions. A model factory is so proportioned that the buildings hold the right number

of machines, with the right amount of space for the workmen, and the right amount of power. If there is more of a single factor than the ideal proportion, it is an unnecessary cost. Even the model factory begins to be out of date almost as soon as the walls are dry, and the method now is to build as nearly as possible on the unit system, so that new parts may be added without the loss of harmony and proportion.

§ 13. **Adjustment of production to changing conditions.** In the adjustment of processes to changing market conditions, many opportunities for business judgment are presented.[2] The agents employed in any industry range from the more valuable down to the less valuable grades in a more or less regular series. As the place of agents on the scale of efficiency is constantly shifting, the various agents represent all grades. One depreciates, possibly is restored later and takes a high place, and again depreciates, until finally it is thrown out of use. One loom embodies the latest improvements and corresponds to the most fertile field; another can still be made to yield a little income; the use of a third results in certain loss. A great mass of unused agents lie just below the margin of utilization in every industry. Some of these are permanently abandoned; some will be taken back into use when business conditions improve. When the iron industry is dull, many forges are out of blast; but when iron is again in demand, there is a gradual taking up of the abandoned forges, factories, and machines as they are brought within the margin of profitable utilization. Many agents not actually earning an income, may do so through a change in business conditions. Great quantities of the poorer grades of wealth, even of those things that are relatively fixed in quantity, lie unused. Great areas on the edge of civilization still await the pioneer, the prospector, and the miner.

[2] See, for example, ch. 7, sec. 6; ch. 9, sec. 11–13; ch. 10, sec. 8–9; ch. 11, sec. 11; ch. 12, sec. 7–14; ch. 13, sec. 5, 7; and Part VI *passim*. The opportunities are so great that some have been inclined to exaggerate their importance, and to see in this meeting of dynamic conditions the only opportunities for profit.

Here is a source of wealth and a field for enterprise, to take these unused things or things imperfectly used, and convert them into effective agents. A rise in the value of any agent at once causes an attempt to duplicate it or to find a substitute for it; this attempt, if successful, puts a check upon, or sets a limit to, the rise. In this search for new devices the man who can see most quickly and clearly has a key to wealth, and he is helping to meet the wants of his fellows in society. Some inventions suddenly increase the efficiency of some grades of goods to such a degree that less efficient ones are thrown out of use, and the margin of utilization is moved to a higher plane than it was on before. Improved types of machinery in the progressive establishments displace the older, less efficient types, which, therefore, more or less completely lose their earning power long before they are physically worn out. The wish of the individual is to raise the efficiency of his own establishment, but in doing that he affects the agents owned and controlled by others. Inventions and improvements gradually become common property, and increase the free goods and free uses not bearing rent and open to every one. One who improves the quality of a machine or the economy of a process may thus unintentionally injure some of the owners of other agents, but the more lasting effect is to increase the efficiency of all agents on the margin of utilization.

CHAPTER 28

PROFITS AND COSTS

§ 1. The broader meaning of profits. § 2. Conception of pure profits. § 3. Dual character of investment profit. § 4. Enterprise and risk. § 5. Pure profit the most variable income. § 6. Meanings of cost. § 7. Superficial view of costs and prices. § 8. Costs adjusted to prices of products. § 9. A single factor of a single product. § 10. The genealogy of value. § 11. Money cost derived from price of products. § 12. Cost an expression of consumers' estimates. Notes On other meanings of profit and The source and cause of profits.

§ 1. **The broader meaning of profits.** The term profit (or profits) means broadly the residual share, the one non-contractual income in the business. It is what is left as a net gain to that person (or group of persons) who assumes the financial risk of the business, after paying off the claims of every one else for any uses or services rendered. Profit in this broad and popular sense is a complex of incomes from various sources and must fluctuate in nature (as well as in amount) from case to case for reasons that are accidental and personal.

We may see this in reviewing the examples above. In the small furniture shop profits includes all economic incomes in the business, whether from the investment or from the joiner's own labor. It is an inclusive term for the usances of tools, shop, materials, and land, and for the services of the owner, whether as investor, manager, or handworker. It embraces *all* the economic yields which by theoretical analysis can be carved out of it. As the business develops, profits, as thus used, means more or less according to circumstances which must be ascertained from the context. If the investor owns all his buildings and land, machinery, and sources of ma-

terials, and has no borrowed capital, then profits includes all that is left of cash receipts after paying wages (and salaries), but wages may be more or less according as the investor takes a more or less active part in the management. If in the one business the buildings, water power, lands, etc., are fully owned, and in another business with exactly the same product all these things are hired, profits in the former would be much greater. While the business is owned by an individual or by partners, profits may include whatever is attributable to the owner for his management; or a fair salary may be estimated for this, and only the remainder be counted as profits. Like complications, or even more troublesome ones, are found in the case of corporations. The one company owns all its patents, the other pays royalties; the one has all its capital represented by paid-up stock and the other has more or less of outstanding bonds the interest of which is a "fixed charge" to be deducted before counting the residual share of profits. The possible variations are endless, but these illustrations suffice to show that profit in any such general sense is not a scientific term for the purpose of studying the forms of income; it has not even a precise practical significance.[1]

§ 2. **Conception of investment profits.** Is there then, no exacter conception of profits possible? Among these various meanings is there one not preëmpted by another term, one which expresses a sort of income found in practical affairs, which business men are constantly trying to estimate and of which economists must take account? Let us try to express such a conception in this definition: Investment profit is the income attributable solely to the active capital-investment in the particular enterprise. The amount and rate of investment-profit is peculiar to each business and indeed to each investment. It is never an agreed price, or a contractual payment. It is the residual after the actual contractual dues have been paid, and the estimated value of the non-contractual labor, and the factor of management (such as the services

[1] See note, On other meanings of profit, at end of chapter.

of officers, etc.) have been deducted. The investment profit concept is most nearly exemplified in practical affairs in the bookkeeping of a corporation. Out of gross receipts must be paid all rents, interest, maintenance and depreciation of the plant, price of materials, wages, salaries of managers and officers, fees of directors, etc.; the residue is the amount which may be paid as dividends to stockholders (or added to surplus) without impairing the capital investment.

§ 3. **Dual character of investment profit.** Even investment profit usually is subjected to a comparison which divides it into two elements. We have seen (Chapter 26, section 4) that it is of the very essence of the active capital function that it takes the financial risk of the outcome. When therefore at the end of the year (or income period) it appears that a certain profit has resulted (say $1000), this is compared with the capital invested (say $10,000) and expressed as a percentage on the investment (thus 10 per cent). Now this in turn is compared with the rate of interest common on the safest loans (say 4 per cent) and the remainder is the amount (or rate) by which this active-capitalist investment exceeds the current rate of passive capital investments. This merely *estimated* division influences further choice of investment. The rate of interest is taken to represent about what capital can do by itself (or with a negligible amount of judgment and supervision—an abstract conception) and the excess above that is attributed to the successful act of investment. Thus, however far we attempt to eliminate the personal service element of management from profits, there always remains in any active capital income this one element of investing management together with the carrying of the financial risk. There is a dual character in investment profit; it is a capital-income and a labor-income, combined. The distinctive feature of investment profit, which fastens our attention, is precisely this excess (or deficit) of income in active-capital as compared with the normal prevailing rate of time-price, which can be secured by the most conservative passive investor. It

is the hope of an income *more than* ordinary interest that is the inducement to active capitalists to assume the risk. We may call the amount realized more or less than the imputed yield of passive investment, pure investment profit, attributable to the exercise of the *pure* investment function. The amount may be expressed as a rate on the investment. This is the utmost point that has been attained in the analysis of the complex elements of "profits" as popularly used.[2]

§ 4. **Enterprise and risk.** To the person who exercised this function of active capital-investment various names have been applied: undertaker,[3] its French equivalent *entrepreneur*, adventurer (especially used in former times of one who embarked in foreign trade), and enterpriser. Each of these was meant to express the assumption of the financial risk in undertaking the ownership of the various factors and of their results embodied in the products, in paying off other claimants, and in waiting for an income indeterminable in advance, but contingent on all the various fluctuations of the market.

Enterprise is the act, or function, performed by the enterpriser, and in a different but related sense is the particular business establishment, or undertaking, which is carried on by an enterpriser. Business management and enterprise are functions not embodied completely in any individuals, but diffused more or less among groups of men. The active-capitalist and the passive-capitalist are not in contrast absolutely but relatively; the passive capitalist is not, and can not be, completely freed from financial risk. Enterprise is merely in this particular business the assumption of the legal financial responsibility to the extent of the enterpriser's credit and resources, or in other cases to the extent of the special legal

[2] See note on The source and cause of profits in economic writings, at end of chapter.

[3] The old English word undertaker, once so used, seems to have been driven out by a rival use; perhaps after "funeral director" displaces it there, it may be reclaimed by economics.

limited liability, as (in most stock companies) to the amount invested, or (often in banking) to double the amount invested.

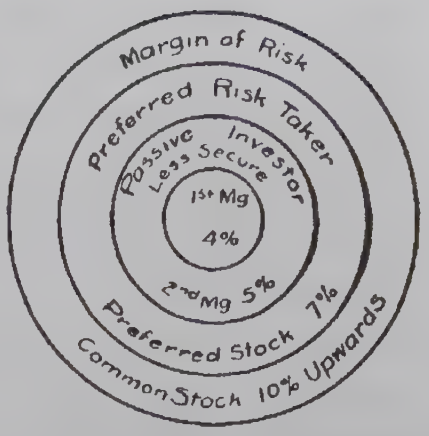


FIG. 41. GRADATIONS OF RISK IN CORPORATE INVESTMENT.*

Risk is more or less everywhere in human affairs, but among various kinds of investments there is a well-recognized gradation in the uncertainty of returns. The enterpriser in a business takes the more exposed frontier of risk, and the various senior securities have prior claims. For example, if the business of a corporation goes badly the first mortgage bonds, getting a low rate of interest, are the first claim on the income and, in case of insolvency, these bonds would be paid out of any assets of the company; so in turn till we come to the common stock which gets nothing until all the other claims are satisfied but which if the business is prosperous may get dividends at any rate permitted by profits. There is thus an investment risk, an element of enterprise even in the safest investment, e.g., government bonds, but this becomes almost negligible in the case of many well-proven investments. This relativity of risk and of the enterprise function may be shown again in the interrelations of different enterprises. (See Figure 42.)

§ 5. **Pure profit the most variable income.** It is easily seen why the income to enterprise is the most variable from one establishment, and from one time, to another. It contains within it all the non-contractual elements of income. The laborer has taken a fixed wage, the passive capitalist has reduced his risk and accepted a fixed interest. Both wage workers and passive capitalists have taken the easy way, have "played safe," and have left the enterpriser to bear the brunt

* The rates given are, of course, only illustrative of the proportions in which they might vary in a particular case. In fact the common stock might pay no dividends for years while dividends and interest on all the other classes of securities were regularly paid.

of the financial risk. The income of each of these classes tends to conform to a general market-rate, being a medium of the gains and losses when labor and capital are applied with various degrees of risk in various undertakings. Enterprise is the most movable element. It is specialized risk-taking. Enterprise has well been called an economic buffer,

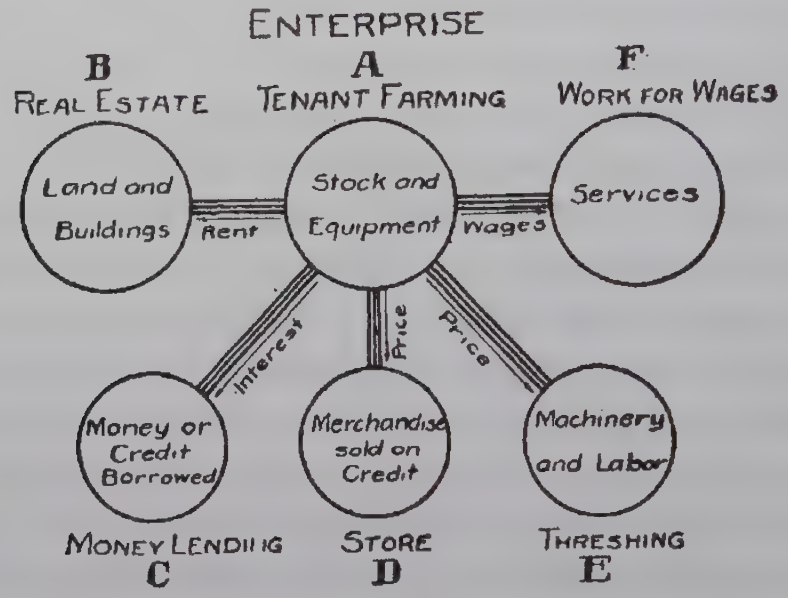


FIG. 42. CONTRACTUAL RELATIONS OF VARIOUS ENTERPRISES.

Let enterprise A be tenant farming, for which are needed farm-land and buildings, borrowed money, and the uses of various rented machines. Enterprise B consists of buying land and constructing a house, shop, store-building upon it to let to enterprise A. The enterpriser in this case takes the risk in deciding on the right place, kind of house, materials, etc., and runs a chance of letting it or being without a tenant. Enterprise C is private money lending, or a bank-business, lending to A. The other enterprises receiving contractual payments from enterprise A are not free from all risk. There is a chance that the agreed payment will not be made and, if it is, that loss will result from other causes (e.g., a fire destroying the buildings). Enterprisers B to F, however, in relation to the incomes they receive from and through A, are relatively protected against risk. Enterpriser A in paying a fixed rent, a fixed interest, etc., is, to the extent of his credit, putting up a margin of security against the failure of crops, of profits, etc.

which takes up and distributes the strain resulting from variations in the momentum and rate of movement of industry. The enterpriser feels first the influence of changing conditions. If the prices of his products fall, the first loss

comes upon him, for the goods already made must be sold. Further loss is avoided as best it can be by paying less for materials and labor. At such times the wage-earners look upon the employer as their evil genius, and usually blame him for lowering their wages, not the public for refusing to buy the product at the former high prices. When, however, prices rise, enterprise gains through selling at higher prices the stock on hand that has been produced at low cost. Enterprise is placed between the forces of competition, between owners of resources and ultimate consumers, between laborers and the final purchasers of labor's services. The enterpriser's economic survival is conditioned on vigilance, strength, and self-assertion.

Profits therefore fluctuate more from industry to industry and from man to man than do other incomes. The variations of the market may sweep away not only all "profits," but all the invested capital. As a consequence, profits may be at other times very high, for enterprise will not take the risk of great losses unless there is a chance of large gains. While the income of the salaried man is occasionally advanced, and then for long periods remains unchanged, the profits of enterprise come in waves. In seasons of prosperity profits in many enterprises swell with a dramatic swiftness while rents and wages move tardily upward. Then again for years profits fall to a level hardly exceeding a low interest on the capital invested or leave many businesses for a time with a loss. Reasons for this result will be shown more in detail under cost of production.

§ 6. **Meanings of cost.** The profit in enterprise results from the surplus of sales (receipts) over costs (expenses). Few words are more often heard in business than cost, or with more varied shades of meaning.

In a general sense cost always means something given up, parted with, paid, to get something else. Often this outlay takes the form of pain, fatigue, or irksomeness of labor, tho this is a psychic cost, better termed *sacrifice*. Thus it is said:

he got it at the cost of tireless effort; it cost him his health. When the worker who is free to determine the length of his working day stops work, he reveals that his valuation of his labor just at that point is greater than the valuation of the product that will come from further labor—the one negative and the other positive in the balance. Psychic cost thus rises to the level of more or less conscious estimation at certain points and, like psychic income, has its part in many ways in the choices made by individuals. It is not, however, the objective measure of cost in the transactions of trade.

In another sense cost is applied to any objective good or any gratification which could have been chosen, but which was given up when another choice was made. This is *alternative cost,* called by some, opportunity cost. It is an option relinquished. One may stay at home and read a book or go on a picnic; the pleasure of reading a book will cost the pleasure of the picnic. A good dress may cost a vacation that must be given up for it. In this sense, each thing is a cost of every other thing that might be chosen in the place of it, tho the alternative cost thought of is usually the most important excluded option. Alternative cost, like psychic cost, is individual, and is significant at the moment of choice but is not the measure in which business outlay is expressed.

The sense in which cost is mostly used in business in the common phrase "cost of production" is money cost. It expresses not the pain of the laborer in doing the work, not the sacrifice of the owner of the capital in saving the money, but merely the sum of money paid out by the producer. Costs, proceeds, and profits are all in business practice reckoned in terms of money. The enterpriser invests in order to realize profits. Enterprise is investment, the putting of capital into concrete forms of wealth; and it is in turn the sale of wealth, a process which might be called divestment. The realization of profit means getting out a total sum of capital greater than was put into the business. Capital is thrown into the melting pot, and is taken out crystallized into new forms of wealth

which may or may not bear a greater price than the costs. The price of the products depends on the valuations of possible purchasers. The customers may be foolish men with unwholesome desires, and profit-making may result from pandering to their vices; but in any case the enterpriser finds himself limited by this condition: to gain a profit he must produce a surplus of value (as judged by his customers) between costs and selling price.[4]

§ 7. **Superficial view of costs and prices.** It is well after this discussion of costs to consider their relation (as a more fundamental problem of theory) to prices and values. The business man, as such, is rarely interested in this question. He knows that many influences unite to determine the cost of the factors he buys, but they are distant; he cannot influence them, and in the single stage of his production his costs seem to fix the price of his products. In some purchases, however, and on the stock exchange, a remarkable power of noting and analyzing the more distant influences is displayed. But in general a superficial view of value is taken in business; it does not pay to do otherwise. The active investor simply takes the price of various factors as he finds them, and seeks to combine them and to sell them when and where he can reap a profit. Yet if he is asked, What determines the prices of goods? he probably replies, "They are fixed by cost-of-production."[5] This is the way it appears from the enterpriser's point of view as he is deciding whether to extend or contract his production and sales, whether to raise or lower his prices.

§ 8. **Costs adjusted to prices of products.** But costs vary from one establishment to another. No matter what any par-

[4] Compare note on value vs. utility of labor in ch. 19.

[5] Economists long took that proposition as sound, and tried to build upon it a scientific explanation of prices and values as they are. It always has been recognized that there are difficulties in such an explanation. We shall not enter into the controversy, but briefly indicate the point of view we now take.

ticular enterpriser's costs may be, the price of the goods is determined by the bidding of buyers and sellers in the market. If any one is so situated that he can regularly get more than cost on any unit, he attributes the gain to whatever agent gives the advantage,—to his patents, his land, his own ability,—and thereafter he adds more to costs on that account. In this case we see plainly that the value (or price) of the factors (that is, the cost) is being marked up (or down) according to the price of the products, and not *vice versa.*

The rule must be reversed also in the case of many large classes of goods. Some things that can not be multiplied or reproduced, such as autographs, old violins, old paintings, diamonds, bring prices that are not dependent on the cost of production. The same is true of great numbers of natural resources, including all lands taken in a state of nature, whether agricultural, mineral, residential, or commercial. That leaves still to be explained the relation of costs to the prices of the great class of goods which are grown by the art of man, e.g., grain, cotton, cattle, etc., and manufactured, e.g., tools, machines, cloth, etc. Now it is noticeable that every one of these objects has a cost just because it happens to be looked at just when it is in the enterpriser's hands at an intermediate stage of its production. The cost rule applies only to factors that have been bought at a price, and the total cost is simply the sum of the prices of the factors. But how did the factors, the various qualities of labor, the materials, use of agents, etc., get their price? That question has been answered in earlier chapters: from the value of the expected product, or uses. The business enterpriser is a middleman, buying to sell again, and his costs determine whether or not *he* can make a profit, but they do not determine the prices of the products. Rather they are seen to be determined by the prices, when a broad enough view of the situation is taken.

§ 9. **A single factor of a single product.** The tracing of the value of goods through intermediate products to direct enjoyable goods, and finally to the source of value in psychic

income, gives the genealogy of value. After the goods enter into the channels of commerce and are once bought and sold, they bear a cost to the owner. In the one direction we seek the "ultimate agent," or factor, the natural agents and laborers; in the other direction we seek "the ultimate products" or ultimate uses. A single product having a single factor shows most clearly the reflection of value directly from the product. (See Figure 43.) The discovery of a mineral spring or of a good quality of building-stone on worthless land, will cause a value to attach at once to the agent. When a great singer like Adelina Patti commands several thousand dollars for each appearance in concert, the value of the music in the minds of delighted hearers is transmitted to the salary of the singer. Her salary is not determined by cost, but it becomes a cost to the enterpriser who employs her and undertakes a concert tour.

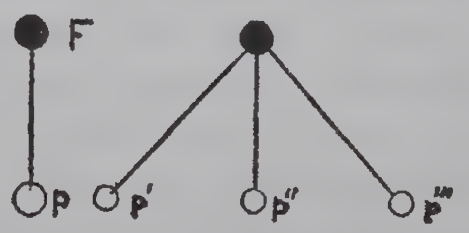


FIG. 43. A SINGLE FACTOR AND ITS PRODUCTS.*

§ 10. **The genealogy of value.** When the one factor yields several different kinds of products no one product alone accounts for the value of the factor. As any one wishing the factor for any use must bid against the other uses, the factor appears, on a superficial view, to have a price already determined by its other uses. But we know from our previous studies (see Chapters 4–6) that the value in any situation results from all the uses taken together, including the par-

* A factor F (it may be a concert singer, an acre of land, or a mineral spring) derives its entire value (usance and capital value) from the price of the product, is valuable or worthless according as the product is so. If two or more products (p', p'', p''') are attributable to it, its value is the sum of their prices (less costs, that is, the prices paid for other factors). But inasmuch as the use of F for one product takes it away from the use of another, the value of its use must be accounted as a cost whenever it is a question of increasing the output of any one of the products. Therefore, at that moment the cost seems primary and price derived.

ticular use we began to examine. To take a simple illustration: a savage finds in a wreck on the coast a number of bars of iron. He and his fellow tribesmen wish them for various purposes: to make arrow heads, spears, knives, hatchets, hoes, ornaments, nails, needles, etc. The value of a bar used to make a knife is in this case derived, in part, through the ultimate factor, from the alternate uses. Taken jointly and considered as one sum, the values of the products account as completely and exclusively for the value of the factor as if

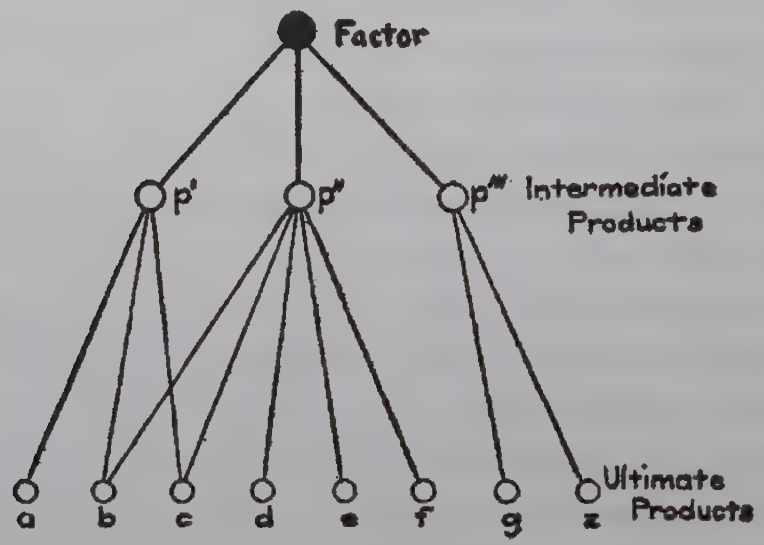


FIG. 44. COMPLEX RELATIONS OF VALUES AND COSTS THROUGH INTERMEDIATE PRODUCTS.*

they were merged into one product. The factor (F) is distributed to each of the products in accordance with the marginal principle and therefore the value of the various products from equal quantities of any factor constantly tends to

* The figure shows how the value of a unit of product at a is reflected up to the source, and through successive links to the most distant product z. The effect of this is to reduce the sale of z and correspondingly the use made of the agent in question. A higher price of leather, p'', due to the increased use of shoes (f), raises the value of hides and cattle (F) and raises thus the cost of carriage-trimmings, pocketbooks, footballs, leather belts, and every other leather product (b, c, d, e). As the price rises, substitutes for leather, and imitations of it, are used for such of the products as can not bear the increased cost of leather. As more cattle are raised to provide the leather, the value of meat (p''') falls, and likewise soap (g) and oleomargarine (z).

equality. Any unit of product sought for any purpose must be paid for according to a value determined by the costs of the factors under the marginal rule in all the applications. The genesis of the value of ultimate factors is found in the value of the product.

In actual life the problem is far more complex, and yet, through its settlement runs just the same principle. There is constant bidding for factors, and through their prices the claims of rival products are adjusted. A point is reached where it does not pay to use any more of an agent in a certain industry; the production of another unit results in a loss because the factors are worth more in other uses. There is a most complex relation among many different industries using the same factors. Thus in countless ways the values of products of widely different kinds mutually influence each other. The value of no one is an isolated fact, but is ultimately only the reflection of its relative importance in meeting the desires of men in view of the whole situation.

§ 11. **Money cost derived from price of products.** Products compete with each other for the factors that enter into them. According to location, quality of the soil, and improvements, a certain area of land has various rival uses. These uses bid for the land; that is, put in an economic claim for it. Products of a higher value outbid and exclude those of a lower. If fine wine can be raised on a piece of land, potatoes ordinarily will not be planted in it. But if there is such a supply of that quality of land that it continues to be used side by side for both products, it will have the same value and yield the same rental in both uses. The law of indifference applies. The demand for any factor entering into products is reflected, in an increased price, to its cost in all competing products. Machines are usually made for some product determined in advance, but often they are only partially specialized and within limits they can be adapted. Sewing-machine factories were readily turned to the making of bicycles at the time of greatest demand, and bicycle fac-

tories later were used for the making of automobiles. Thus, in general, machinery is used for the product in which it can realize its highest value. Any enterprise seeking it for any other use finds its "cost" affected by its various alternative uses. The same is true of all the materials and of all the grades of labor entering into products. The enterpriser's cost is therefore the reflection of the ultimate prices of the productive agents in all its other uses as well as in the particular product he desires.

§ 12. **Cost an expression of consumers' estimates.** We thus conclude that even where cost appears to be the limiting influence in the price of a particular product, the cost is itself fixed by a larger group of influences, the demand for the factor in the totality of its uses. Wherever cost asserts itself the enterpriser must bow to the situation, and must conform closely to costs or suffer a loss. The consumer by deciding to buy this or that product sets into motion waves of value. The enterpriser transmits these to the factors. He is the medium through which consumers express their estimates. The enterpriser who anticipates aright and satisfies the public taste is the good medium. He readily transmits and accurately focuses the rays of public judgment. The enterpriser who misjudges is a poor medium. The one realizes profits, the other incurs a loss.

NOTES

On other meanings of profit. It is well to note for caution's sake other loose uses of profit as any gain or advantage secured by any means in business. In retail business it has the meaning of the gross gain on a given sale, the excess of the selling price over the price at which the merchant bought it from manufacturer or wholesaler. Let us call this *sale-profit*. Buying an article for one dollar and selling it for two dollars, is said by the merchant to be selling at 100 per cent profit, jocularly called, "The Dutchman's one per cent." In different lines of goods there is added regularly to this cost 20, 30, or 50 per cent, as the case may be, as the merchant's profit on the sale. Sale-profit leaves out of account rent, interest on capital, clerk hire, freight, and many other minor items that enter into the cost of running a store. It often happens that the Dutchman's way of reckoning is near the truth, and

that the sale-profit of 100 per cent leaves at the end of the year hardly 1 per cent of the sales as a true income to the merchant. This meaning is sometimes developed to a *yearly sales-profit*, the sum of all the separate sale-profits within a year, or the difference between the wholesale and retail prices of goods sold within the year.

Another meaning is given to the term by expressing yearly sales-profits as a percentage of the capital invested. The rate of profit in this case varies partly with the rate of the turnover. To illustrate: if the amount invested in a printing-office is $100,000, and the annual business done is $300,000, the capital is said to be turned over three times; if the yearly sales-profit were 20 per cent, the ratio of sales-profit to investment would be 60 per cent; but, if the capital had been turned over four times, the rate would have been 80 per cent on the investment. In none of these cases is profit used truly as an *income*.

The source and cause of profits in economic writings. Profits, as used by the English economists from Adam Smith ("Wealth of Nations," 1776) to John Stuart Mill ("Principles of Political Economy," 1848) and after, was the residual amount combining the incomes attributable to the personal management together with the capital-investment. These functions were assumed without discussion to be united in one person, as they usually were, stock companies at that time being rare outside of banking and foreign trading companies. The capital-income was assumed to be much the larger part and there was almost no thought of the varying degrees of ability in management as affecting the result. Hence profits in the older English economics often means nearly the same as yield from capital, peculiarly the income of the *capitalist;* tho usually it means this plus an allowance for risk and services of management. "Normal" profit was thought of as varying from one *class* of business to another but not very clearly as varying from one establishment to another.

Then the pendulum swung in the other direction and some writers, notably the American, Francis A. Walker, made profit mean almost *solely* the earnings of management, it being assumed that financial resources naturally rolled into the possession of able business managers. But, as it was assumed that they always had some capital themselves, the concept of profit still had a dual character. Capitalists were thought of as always getting a contractual income, interest, whereas the *entrepreneur* got an income varying from zero (or a minus quantity) upwards, according to his skill in management.

CHAPTER 29

VARIOUS SHADES OF PROFITS

§ 1. Review of the profit-concept. § 2. Skill in relation to risk. § 3. Union of chance and choice. § 4. Element of pure chance. § 5. Changes in transportation and in land-values. § 6. The so-called unearned increment. § 7. Element of speculation in business. § 8. Specialization of risk-taking, in produce markets. § 9. Produce speculators as insurers. § 10. Ignorant and dishonest speculation. § 11. Fraudulent and illicit profits.

§ 1. **Review of the profit-concept.** Profit is the legal residual share of the total income yielded by an enterprise, the share (positive or negative, profit or loss) that is left to the owners of the enterprise. Every enterprise, however simple, involves ownership of agents and product, and between the investing and the accounting at the end of any period, there is financial responsibility and profit or loss. This may be minimized by one owner by contract with another, the one thus becoming more passive and safe, tho still having some risk, and the other, taking at a price the active control of wealth and services and selling the results for whatever he can get. The laborer still runs the risk of becoming incapacitated by illness or accident, or of being thrown out of employment. The lender still has some risk of failure of the debtor, etc. But the laborer sells his labor, and the capitalist sells the use of his wealth—horses, lands, equipment, and of his loanable capital, and accepts a definite income and the legal responsibility of the borrower to repay the loan.

§ 2. **Skill in relation to risk.** In most enterprises and under normal conditions of business the largest factor in determining whether there will be anything left for profits is

the skill with which the business is planned and managed, from the first investment to the last little detail by the well-chosen agents of the enterprisers. There are many chances and risks, but few of them are completely objective, of a kind utterly beyond the control of the enterpriser. Even loss by lightning, flood, fire, and other "acts of God" (in legal phrase) are more or less liable according to the judgment and foresight in the construction and location of buildings, care in their oversight, etc. This power to minimize risk, the restless watchfulness and the intuitive anticipation of dangers, and often the discovery of ways to convert them into advantages, is a large part of what is meant by skill of management. The risk of business is not that of the throwing of dice in which (if it is fair) skill plays no part, and gains in the long run offset losses. Business risk is rather that of the rope-walker in crossing Niagara; the task is easily undertaken by the skilful Blondin, it is fatally dangerous to the man of unsteady nerve and limb. The skilled workman, handling, with sure touch, the delicate and costly materials, can not be said to be incurring a great risk of spoiling his work, however great the risk to the novice or the bungler.

Looking at this large phase of the problem, profits are seen to be due not to the existence of risks, but to comparative skill in taking risks which in many cases is the ability to make the risk dwindle or disappear. Some men are more able to perform the function of enterprise than others, and profits are high or low just as fruits are bountiful on fertile soil and scanty on barren soil. In this aspect profits in the long run are the share (non-contractual) of skill and ability in the function of enterprise; and our illustrations above have largely been drawn from industries in which this seems to be the true view.

§ 3. **Union of chance and choice.** But there is another aspect of the subject. Profits, just because it is the actual residual, is the most complex and varying share. The enterpriser, to the extent of his credit and financial strength,

undertakes to assume the risks for all the other factors. Profits is the catch-all for every unforeseen or variable change of price between each act of investment and the ultimate sale of the goods. Chance therefore has its part; but the temptation is to exaggerate its importance. Many cases of profit said to be due to chance are found on closer knowledge to be due to superior judgment. They result from a union of happy chance with deliberate choice. The adventurer who, on the discovery of gold, goes at once to California or to Alaska, may stumble upon a gold-mine. It is luck; but he has gone to a place where gold-mines are comparatively plentiful. If he stays at home it is more likely that he will stumble over an ash-heap. Throughout life there is constant opportunity, but it must be sought. One who has the good judgment to be ever at the right time at the place where he has the best chance of finding a good thing, usually gets the advantage, and men call it luck. The more the causes of success in general are studied, the larger is found the element of choice, the smaller that of luck.

§ 4. **Element of pure chance.** But after all these qualifications, cases remain in which profits can only be said to be the result of pure chance or luck. It still sometimes appears better to be born lucky than to be born rich. What is luck? A result that is not calculable, coming to pass in conditions where a rational choice is not possible, is called luck, for lack of another name. There is bad luck as well as good luck. According to the law of chance, in the tossing of a coin for "heads or tails," one side is as likely to come up as the other, and in the long run the number of heads and tails will be equal. Taking all together the pure accidents of certain kinds, in the community, they are so numerous that losses and gains distribute themselves about a general average by what is called the law of averages, or the law of large numbers. The individual's risk then may be eliminated by insurance, as that against fire, flood, lightning, against sickness of the employer, which would cripple the business, or against his

death, which would check it. But many factors evade all attempts to reduce them to rule and there is no possibility of insuring against them: war, changes in markets, good and bad harvests, financial crises, etc. One year the enterprise gains, another it loses. One man makes a success because he happened to engage in business at that time, another man fails because he happened to undertake it at another time, with no more real judgment in the one case than in the other.

§ 5. **Changes in transportation and in land-values.** The union of choice and chance in varying proportions is seen in many instances of the increase in the value of land. The rapid changes in transportation since the beginning of the nineteenth century have wrought great changes in the value of lands for many purposes, and thus have brought great chance profits (and often great losses) to individuals. To take a few examples.

The Erie Canal, completed in 1825, increased the trade of the ports of New York and Buffalo, brought prosperity to many cities on its waters, increased the value of agricultural lands on and near the Great Lakes, but reduced the value of many farms in New York and New England. The completion of the Boston and Albany railroad in 1841 and the later opening of the Hoosac tunnel probably helped the mechanical and depressed the agricultural industries of New England. The spread of the railroads in the United States from 1850 to 1880 went on with unparalleled rapidity, and opened up to settlement great areas of rich lands which rose in value. At the same time the large new supplies of agricultural produce so reduced prices in the great markets, and the incomes from lands in eastern America and in western Europe fell so greatly that many farmers were bankrupted. Timber lands bought from the government at fifty cents an acre made enormous fortunes for the so-called "lumber kings" of the Northwest. The Panama Canal raised the efficiency of ships plying between New York and San Francisco, enabling them to carry freight more quickly and in greater amounts. The railroads

must lower some freight rates and even then lose a part of their traffic, and many of the lands on the Pacific coast must rise in value.

Changes in transportation alter the location and character of all kinds of enterprises. After the building of the railroads in Pennsylvania new forges were built where deposits were richer or where materials and products could be more cheaply shipped, and many prosperous small forges on the country roads became valueless. A similar change has relocated the flour milling, the mechanical, and the textile industries of a large part of the country. As population has been growing rapidly in Christendom in the past century or more, farms have become villages, villages have become cities, low-priced residential lots have become expensive business sites.

§ 6. **The so-called unearned increment.** Such changes and chances as these have resulted in profits and losses to great numbers of landowners, who as investors have seen their lands rise above or fall below the price for which they bought the land. The name "unearned increment" has frequently been applied especially to this kind of profit of the landowner. It is true that in many ways the ownership of a piece of land may give unexpected gains. Farm land of the poorest kind often is found to contain valuable mineral deposits. Such a lucky find lifted the mortgage from a farm in eastern Pennsylvania, from which, in two or three years, feldspar was taken exceeding in value the agricultural products of the same land in the fifty years before. The discovery of building stone, coal, natural gas, or oil beneath the surface has brought riches to many a poor landowner. A mineral spring, because of the supposed or proved healing properties of its waters, may be as good as a mine. Fitness to produce nettles is not ordinarily a virtue in land, but the discovery that certain fields produce a superior quality of the nettle used for heckling cloth, causes them to rise in price. Marsh land, almost valueless, found to be peculiarly fitted for the cultivation of celery, becomes very valuable. While the in-

come of the owners of these lands is increased, that of other owners may be diminished, as a result of the fall of prices and the shift of demand.

The increment of land values seems especially unearned when it arises as an incident to the holding of the land for other purposes, as for farming, or for one's own residence. The striking fact in the extreme cases of chance increments of land values is that profits accrue to quite unenterprising landowners. Many dramatic changes of fortune have resulted and in many a case some half-miserly old farmer doing nothing to improve the community and opposing all change, has left a fabulous fortune to his heirs. And yet, comparatively speaking, such cases are about as rare among landowners as are capital prizes in a lottery, and there are many cases of profit in things other than lands, where there is a similar profit due to chance. Stocks of goods are worth more or less, horses, cattle, grain, go up and down in price in the hands of farmers or of produce merchants. All profit involves this element. Land profit is but one notable example of a general fact.

Moreover, while the change of land values is on the whole upwards where population is increasing, many pieces of land fall in price; there are undeserved decrements as well as unearned increments. So far as increases in land value can be foreseen they are included in the present worth of the land, and the new purchaser does not thereafter, viewed as an investor, get any "unearned" increment except from *unforeseen* or miscalculated changes.

As a matter of the theory of profits there is nothing peculiar in the "unearned" increment of land. A question calling for separate consideration is whether it is expedient to adopt a different policy as to property in land, by special land-taxation, or by appropriating the profit (increment) which now goes to the owners in advancing neighborhoods, or by any other limitations.

§7. **Element of speculation in business.** A still further

specialization of risk-taking is effected by means of insurance and of certain forms of speculation. In its broadest sense speculation means looking into things, examining attentively, studying deeply. In a business sense the speculator is one who studies carefully the conditions and the chances of a

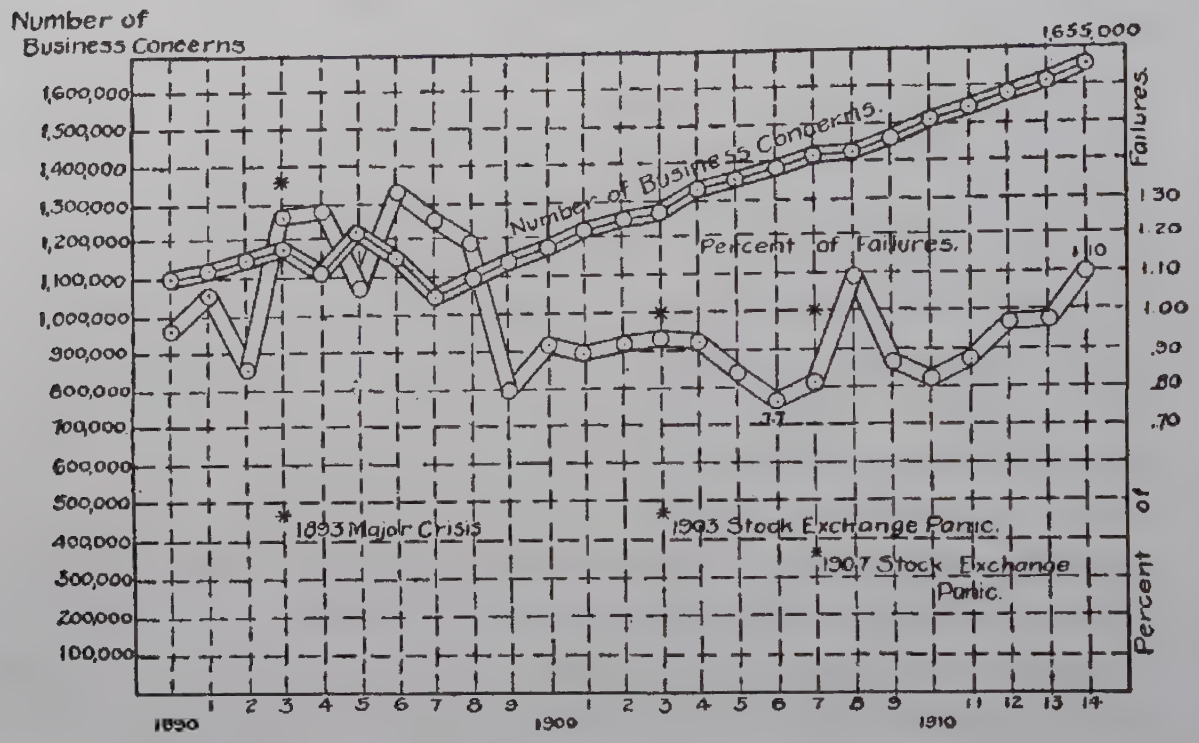


FIG. 45. BUSINESS FAILURES IN THE U. S., 1890–1914.*

* The statistics cover only the kinds of enterprises that are reported upon by the large commercial agencies and therefore do not include farming and numerous petty enterprises. The total number of business concerns reported was about one sixtieth of the population. The general yearly average of failures was about 1 in 100 business concerns. If enterprisers are in business on the average 33 years, the chance of any one of them failing sometime in his career is 1 in 3. The increase of failures in or just after a year of financial trouble appears in 1893, 1907–08, and 1914, but the stock-exchange panic of 1903 showed no effects. The rate continued high in the long financial depression of 1893–98, was low in the generally prosperous years 1899–1906, and rose steadily from 1911 to 1914.

change of prices; hence arises the thought that speculation is connected with chance. The enterpriser should be able to estimate these chances better than most men. Every enterpriser is to some extent specializing as a risk-taker. He re-

lieves the other agents of part of the risk, and he insures both laborer and capitalist against future fluctuations of prices. Some of the profits of successful enterprise are speculative gains of this sort. Offsetting them, however, in large measure, are the speculative losses, by which in many cases the investment is swept away altogether. The cautious business man tries to reduce chance as much as possible by insurance, where a regular system prevails, and to confine his thought and worry to the parts of the productive process where his ability counts in the result. A man can better concentrate his thought and effort upon running a flour mill, if some one else will, for a price, take the risks of fire, of loss in shipment, and of a rise in the price of grain needed to fill outstanding orders. Insurance being the economical way to cover risk, the reckless will, in the long run, more likely be eliminated from the ranks of enterprisers.[1]

§ 8. **Specialization of risk-taking in produce markets.** In some lines the risk of marketing and carrying large stocks becomes highly specialized, so that ordinary enterprisers shift it to a small group of risk-takers. In buying and selling large quantities of produce there is required the closest and most exclusive attention of a small group of men. The marketing of some staple products requires the most minute acquaintance with world conditions. To foretell the price of wheat one must know the rainfall in India, the condition of the crop in Argentina, must be in touch as nearly as possible with every unit of supply that will come into the world market. Such knowledge is sought by the great produce speculators in the central markets. If all means of communication—telegraph, cables, mails—are open to all, competition among these speculators becomes intense, and the result is great efficiency. Their survival depends on the development of acute insight into market conditions. The margin at which farm produce is sold in the great wholesale markets is a very narrow one. These products are marketed along the lines of the least re-

[1] Insurance will be treated in the following volume.

sistance; that is, of the greatest economy. The function of the commercial specialists is to foresee the markets, and to ship to the best place, at the right time, in the right quantities. If a product shipped to Liverpool will, by the time it arrives there, be worth more in Hamburg, there is a loss. Such difficult decisions can be made best by a small group of men selected by competition. When handling actual products they perform a real economic service.

§ 9. **Produce speculators as insurers.** Many of the speculators in staples, wheat, corn, wool, rarely handle the material things, the real products. They make it their business to study the world conditions and to buy or sell for future delivery. Regular merchants buy and sell "futures" from or to these men; that is, they promise to deliver or take the produce or pay the difference between the contract and the actual price at the time of maturity. Mere speculators on the produce markets may and do at times thus perform service as risk takers. When a miller buys ten thousand bushels of wheat that will remain in the mill three months before they are marketed as actual flour, he "hedges"; that is, he at the same time sells that number of bushels to a speculator for future delivery. If wheat goes down in price the loss on the actual wheat is balanced by the gain on the "future," and *vice versa*. Or selling flour for future delivery the miller buys a future in wheat; if wheat goes up in price, the miller's loss on his contract for flour is offset by the gain on the "future." In either case he cancels the chance of loss or gain, giving up the chance of profit in the rise of wheat in exchange for protection from the loss of the product on his hands. To him this is legitimate insurance, for he is striving not to create an artificial risk, but to neutralize one that is inseparable from the ordinary conditions of his business.

How can the speculator profit if the miller in the long run benefits? There are unsuccessful speculators and at any rate their losses go to the successful as a sort of gambling profit. But, further, the sales to legitimate purchasers should net a

gain to the abler speculator. In proportion as his estimates are correct, there will remain a regular slight margin of profit to him. If he sells wheat at eighty-five cents to be delivered in three months, he expects it to be a little less at that time; if he buys a future he expects the price to be a little more at that time. In the long run the speculator to be successful must buy at a little less and sell at a little more than the price really proves to be. This means that the merchants in the long run pay something for protection against changes in prices, just as they pay something for insurance. And yet this is the cheapest way to reduce risk, and a man engaged in milling is, it is said, at a disadvantage if he neglects this method of insurance.

§ 10. **Ignorant and dishonest speculation.** What has just been described is the more legitimate phase of buying on margin, not its darker aspect. One who, having no special opportunities to know the market, buys or sells wheat, or other commodities or securities, on margin, is called a "lamb." He is simply betting. He has no unusual skill; he can not foresee the result. The commission paid to brokers "loads the dice" slightly; the opportunities of the larger dealer of anticipating information load the dice heavily against the "lambs." Secret combinations and all kinds of false rumors cause fluctuations large enough to use up the margins of the small speculator. At times a number of powerful dealers unite to cause an artificially high or low price, a situation called "a corner," in which both other professional speculators and the outsiders are made to pay heavily. But this is little other than gambling between bettors.

§ 11. **Fraudulent and illicit profits.** Interwoven with profits in many cases is a dark thread of fraud. *Caveat emptor* is by law the rule of the market, and the salesman often uses the subtle arts of misrepresentation. Undoubtedly honesty is the *best* policy, but it is not always the most profitable policy in a pecuniary sense. Cheating, lying, breaking of contracts, bribery of public officials, and many similar acts

may increase individual incomes. One man gains a temporary success by acts that are later punished as crimes; another, guilty of like deeds, escapes conviction for lack of evidence or on technicalities, and enjoys ill-gotten wealth. More fortunes, however, are due to actions on the border-line of law which society is not yet wise enough to condemn or efficient enough to prevent. No code of laws can be framed that will make possible the punishment of all evil acts in trade. Any law that would catch all the guilty would injure many of the innocent. The efforts of social reformers are being directed toward detecting and preventing the fraud, intimidation, and extortion that still make up no inconsiderable part of private profits. It may be noted that under the English common law, for centuries past, monopoly has been tainted with illegality, so that all monopoly profits that are not legally protected (such as incomes from patents, copyrights, fairly obtained franchises, etc.) must be classed under this heading.



CHAPTER 30

COSTS AND COMPETITIVE PRICES

§ 1. Competitive prices and unequal costs of competition. § 2. Selling and cost-finding. § 3. Examples of joint costs. § 4. Main classes of costs. § 5. The problem of cost accounting. § 6. Homogeneous products with unequal costs. § 7. Principle of charging what the traffic will bear. § 8. How prices are limited under competition. § 9. Borderland of monopoly. § 10. Difficulty of departing from average costs in competition.

§ 1. **Competitive prices and unequal costs of competition.** The product of a business must be sold, and for this some special selling management and selling organization is required. In a mercantile business selling is the largest part of the activity, and to this end well-located stores, window displays, clerks, agents, expensive advertising, and delivery wagons are needed. The prime cost of the articles at wholesale, plus certain minor expenses, plus the selling cost, make up the whole cost of doing business. In all other kinds of business whether agricultural, manufacturing, transportation, etc., selling is an important task, which must be well done if all the other labors of management are not to be in vain. The products of a factory will not sell themselves, and the obtaining of a regular series of orders sufficient to use the equipment fully is one of the most essential conditions of a low unit cost of production.

The selling price must as a whole equal cost or there will be a loss. New factories are constantly arising with new and better adjustments and the processes are always changing. No two enterprises have exactly equal advantages of location for materials or markets, etc., or are managed with exactly

equal ability. Hence there is always a pressure of competition on some managers who constantly complain that they must sell below the cost of production. Business men say that competition is destructive, and it certainly does destroy the less favorably situated enterprises. Each enterpriser's price is the highest he can get in the market for his product; it may far exceed his costs; it may fall below them, but only temporarily, for if sales continue to encroach on capital, the sheriff soon closes the doors. Successful competitors are constantly pressing upon the marginal enterpriser, fixing a price that leaves themselves a profit, but is below his cost. Even the most successful manager comes into contact with cost, and seems to be compelled by it. He reaches out for trade, and sells some (not all) goods at a price which leaves him little if any profit. He enlarges his factory and ships goods farther, paying the freight, which means a lower price at the factory. The expanding business, therefore, comes at length to the point where it can not go farther at the prevailing prices. Hence the business man's view of the costs is that they determine price. It is true in the sense that the supply of a particular product in any market is at last limited by cost to marginal producers or of marginal portions of supply. But it is not true of all the units of product that costs determine, or equal, market-price. There is a margin above costs to the successful enterpriser on a large portion of his output. The margin may be narrow or wide, according to the business. The margin is "profit," on the particular sale, and helps to determine the true profit remaining at the end of the year.

§ 2. **Selling and cost-finding.** Speaking generally, there is no upper limit to the selling price the seller would take, but he can never get an unlimited, and rarely what *he* deems a really liberal price. Buyers are striving to buy as low as they can. The seller must often decide whether to sell at an offered price or to refuse the offer. Success in getting orders requires under most circumstances that the cost of each article

to the seller shall be pretty exactly determined, or at least a minimum fixed below which the selling agent must not go. The ascertaining of the cost of particular articles, which before a study of the facts appears so simple, is in a literal sense well nigh impossible. It is easiest where the whole undertaking is treated as one transaction, as the buying of a house, perhaps making some improvements in it, and selling it. There the total of first cost, plus costs of improvements, taxes, insurance, repairs, fixed charges, etc., subtracted from selling-price plus other receipts as rents, etc., give the balance as profit. Similarly it is easy to determine with sufficient practical accuracy the cost of the whole business in a year, which, subtracted from total receipts (and taking due account of the difference in inventory and appraisement of the plant at the beginning and end of the year), gives the profit. But the difficulty is in deciding how much of this total cost should be allotted to particular units of product, for most of the costs have been incurred for a number of different units which must be produced at once. The costs are joint, and not several. Some simple illustrations will make this clearer.

§ 3. **Examples of joint costs.** A woman at the death of her husband is left with an excellent, well-furnished house and a scanty income. For sentimental or family reasons, whatever they be, she is determined to keep the house in any case, tho it is larger than she needs. To lighten the burden of taxes, repairs, and family expenses, she wishes to let some rooms if she can at anything above cost. Now what is cost in that case? To her it would consist of, first, the price of the extra service that must be hired, of the extra washing, light, and heat, of the extra wear and tear on furniture, linen, etc., as compared with leaving the rooms empty, and secondly, enough additional to make it "worth while" for herself—either in merely psychic terms, trouble, or in this plus the worth of her time in doing something else that might pay better. She would not need to count a fair normal return on the original cost, or the present cost, of new rooms and fur-

niture, for she has them and intends to keep them in any case. It is only the *extra* cost attributable to taking roomers that need be considered, and the minimum addition to her income need be no more than the meagerest pay at which she values her own services. This minimum price of bare cost, yielding nothing to the main investment, may be also the maximum she can get if there is little demand for rooms in the neighborhood. If, however, there is a brisk or growing demand for rooms of that kind, the price she can get may be higher in any degree, up to the point where more houses will be built, and rooms let at prices that include a full estimate of the cost of building, of new furniture, etc. The price at that point may be called a *normal supply price,* or *normal cost* price; but before there has been time to build new houses the price of room rent might go much above, as it had before been much below, this normal cost.

Another illustration of the same problem in a different set of conditions may be helpful. An autobus service was begun between a small city and a village a few miles away. A few months later the proprietor declared it did not pay the cost of running it, which he estimated to be $7.50 a day, including repairs, interest on the cost of the car, depreciation, etc. This was $1.87½ for each of the four round trips, whereas on some trips the receipts were nothing at all. He admitted, however, that it would be a mistake to count the cost and receipts of each trip separately, and that the success of the whole enterprise depended on maintaining a regular, dependable service, even tho sometimes the car traveled empty. The light trips were helping to secure the traffic that paid on the heavy trips, on some of which, every week, receipts were as much as $5. Taking all the receipts of the service together, however, there was still a deficit of a few dollars a week on the average, which the owner had to make up out of the earnings of his garage. After the auto service was started it helped to advertise the garage, and many bicyclists and autoists along that line who had never come to the garage found it a very convenient place

to send for repairing and for supplies. The increased profits of the garage about offset the loss on the bus service. Another new kind of business was developed, as the autobus in summer was often hired for parties to the shore at $15 to $20 a day, and at such times a smaller car could be sent on the regular trip. And there were some other incidental advantages that at length converted a tale of loss into a story of business success.

§ 4. **Main classes of costs.** These two cases present in comparatively simple form the problem which every larger business involves in very much more difficult form. The total costs of any business are roughly distinguishable as fixed costs (or fixed charges) and variable costs. Fixed costs are those which remain unchanged on the business as a whole, or on some department, no matter what the size of the output. There are some costs, as the rent of office, factory and store, salary of manager and clerks, etc., which would go on if nothing were sold, unless the business were closed. Variable costs are those which are attributable solely and exactly to particular units of product, rising and falling exactly in proportion to the output.[1] In truth, costs share these characteristics in a great many degrees, are more or less fixed or variable, and are never (or with very meager exceptions) either absolutely fixed or absolutely variable.

The variable costs are also called direct because put upon the particular unit of goods, and the fixed costs are correspondingly called indirect, or overhead charges. It is a very difficult matter, and yet one of very great importance, to arrive at principles and practical working rules by which in each business the various elements of cost may be allocated to different departments, classes of goods, and particular units of

1 "Variable" does not mean that the unit price of the factor necessarily changes, e.g., that the wage paid *per piece* for making the articles varies; nor "fixed" that the unit price of these factors is unchanging. The meaning is that in the one case more are needed, and in the other the amount needed remains unchanged, regardless of the size of the output.

output. For this end a special art of cost accounting has been developed, and a special class of expert cost accountants. The principal elements of costs distinguished in cost accounting are represented in Figure 46.

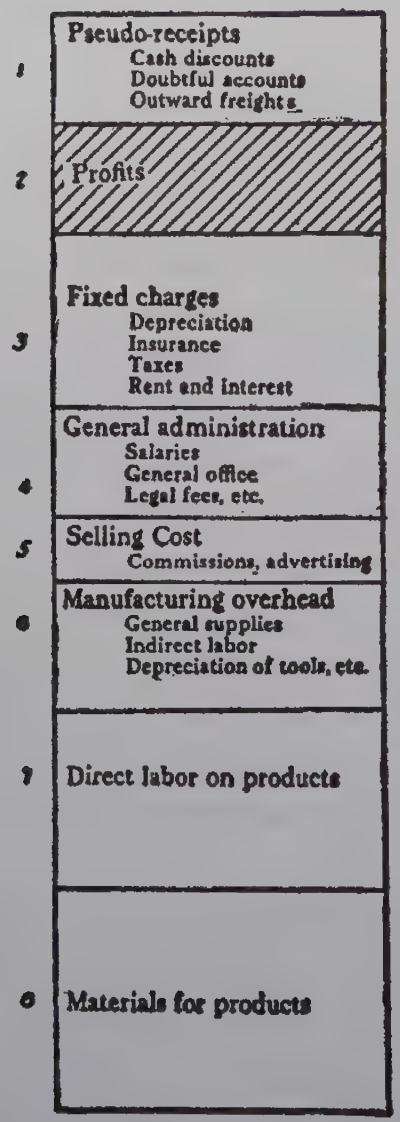


FIG. 46. **Elements of cost.** This figure may be taken to represent either the total costs of a year's business or the costs of a particular unit of goods. In the first sense the whole rectangle represents the total receipts from sales. Of these, the part marked 1 represents deductions from sales which are pseudo-receipts (mere bookkeeping items) and might be first deducted, leaving the rest of the column to be distributed among costs and profits. (See items below.) Some of these items are differently classified by cost accountants. "Cash discount," allowed to customers for prompt payment of bills is, perhaps for convenience rather than logic, included by some in fixed charges. "Doubtful accounts" is, together with "depreciation on plant" (see fixed charges), included in another general class of "reserves" set aside to cover these items. "Outward freights," those paid on goods shipped to customers as a part of the agreement at sale, might perhaps more logically be counted as a selling cost. At the bottom are shown the most variable elements of costs in manufacturing, which are materials (8) and direct labor (7), the kind employed directly on the product, and which in large part can be employed and discharged as need requires. Then come the manufacturing overhead (6), which includes general factory expenses, as factory office supplies, heat, light, power, repairs, and renewals; labor, indirect, such as foremen, porters, cleaners, messengers, watchmen, teamsters; salaries of superintendent or master mechanic, and clerical help on shop accounts (as distinct from the work of the general administration or of the selling department); and depreciation of tools and machinery as distinct from the general plant.

Then come (5) selling cost, the main items of which are salesmen's

salaries and commissions, and advertising; (4) general administration, which includes salaries of the officers, and fees to directors, and general office expense, traveling, printing and stationery (not advertising), postage, telephone and telegraph, legal retainers and fees; (3) fixed charges, which include depreciation (if not put into a special reserve), insurance on the plant (which as a safeguard against fire, is a substitute for depreciation), taxes, and finally rent and interest. These items may cover either actual rents and interest paid, or hypothetical rent and interest, the normal amount of income on a passive investment of the same estimated value. The remainder at the close of the year, as indicated in the shaded space, is profits in a wider or narrower sense, according as it does or does not include the amount normally attributable to a passive investment.

§ 5. **The problem of cost accounting.** The difficult task of cost accounting is to break up this annual total into minute fractions and to distribute them in due proportion so as to tell if need be the cost and profit on any unit of product. Sometimes a large undertaking turns out a single, homogeneous physical product, as gas, electricity, water, bricks, salt, paper of a certain grade, spools, pig iron, etc. Here a unit cost and profit can easily be estimated from the total annual figures; but if the management desires to ascertain the cost of each of the series of processes through which each unit goes, the problem becomes more complex. Another type of undertaking makes numerous kinds of goods, but in standard patterns, such as tools, machines, stoves, wooden furniture, carpets, cloth, etc. Here the unit cost is estimated by following the product through the various departments, and this cost figure once fixed can be used continuously and repeatedly tested. Another type of business does all its work on special orders, such as job printing, electric installation, house contracting, etc. The constant recurrence of somewhat similar kinds of jobs tests the estimates and permits a pretty exact allowance to be made for the usual delays and losses.

§ 6. **Homogeneous products with unequal costs.** But no matter how carefully these unit-cost figures are worked out, the salesman is tempted repeatedly to ignore them. He sees

a chance to sell below cost and still make a profit. This is the paradox of price cutting. It is an ever-besetting temptation of the business man, sometimes leading him to profits, but often to his undoing. The key to the mystery is already in our hands: it is that all costs are in some measure joint-costs, and that every estimated several-cost has something of arbitrariness in it. Take a case where this would seem to be least true, where the entire output of a large industry is a single homogeneous product, such as water, electric current, etc. Here surely, if anywhere, the unit cost is certain, being the simple arithmetic quotient of total cost divided by the number of units. But, no, as frequently here as in any business the seller finds differences of a real character and is forced to assume differences in other cases in order to make a sale. In some cases he finds the estimated cost to be incorrect, in others he finds it to be futile. The cost of reading meters, keeping up the service pipes, and rendering bills is greater per unit of water, gas, or electricity, for small users than for larger ones. This can be adjusted by making a flat fixed charge to each consumer for meter and labor, little if any more for large than for small consumers, and a separate charge per unit of product alike to all. For example, if electricity is charged at 13 cents a kilowatt hour, the bills would be

Customer A, using 10 kilowatts monthly @ 13 cents = $ 1.30
Customer B, using 100 kilowatts monthly @ 13 cents = $13.00

If a charge of $1 a month per customer is made for meter, etc., and a separate charge of 3 cents per kilowatt hour, the bills would be

Customer A, uniform charge $1.00 plus $ .30 = $1.30, actual price, 13 cents per k. h.
Customer B, uniform charge $1.00 plus $3.00 = $4.00, actual price, 4 cents per k. h.

§ 7. **Principle of charging what the traffic will bear.** But where no such reasonable explanation can be found,[2] and the

[2] There are numerous other reasons for classifying customers, which must be reserved for discussion with practical problems. The example is sufficient for our present purpose of explaining the principle.

outward conditions all point to a uniform cost, the seller is repeatedly faced with a situation where at the moment and, as he says, "for practical purposes," he is impelled to assume a difference. The business is there as "a going concern," a large part of the charges are, or appear to be, fixed charges —in any event will not be increased by the particular increase of product in question, which will more fully and proportionally utilize certain parts of the equipment. The new business can not be secured at the average rate paid by a similar class of customers (possibly because of this customer's advantageous position to buy somewhere else, or because he can produce for himself more cheaply than the average customer, etc.). A lower rate is made to get the new business, while the old customers continue to pay the old rates, the result being that the total profits of the enterprise are increased. There is scarcely an enterprise, large or small, in which essentially this situation does not sometimes present itself.

But note this: unless the price to the other customers is reduced to the new rate, there is here discrimination in prices, unlike charges to like customers, for substantially the same service. The price is on the principle of charging what the traffic will bear. A portion of the customers may be bearing all or nearly all the fixed charges, while another portion is bearing little more than the variable charges occasioned by their part of the output. By a sort of historical accident the late comers get the benefit of the economies of an established business which the early comers made possible. Altho the old customers are charged no more than they were before, they are now charged more than are other customers, possibly their competitors; and this may have practical effects quite as serious to them as if they were charged absolutely more than they were before.

§ 8. **How prices are limited under competition.** The phrase "charging what the traffic will bear" is usually heard in connection with monopoly-price. Yet every competitive seller gets all he can for his goods, and still make a sale. This

is "charging all the traffic will bear," but under competition the traffic will not bear as much as under monopoly. Each buyer is following the same principle, giving as little of the price-good as he needs to give to get the sale-good; in popular phrase, he is trying to get the most for his money. Still out of these various desires to get indefinitely high prices, emerges, under true competitive conditions in a market, one common market-price. (See above, Chapter 7.) This is the best price any trader can get on the principle of charging what the traffic will bear in a truly competitive market. In a market for homogeneous products where there are on each side of the market at least two truly competing traders, the attempt of any trader to discriminate, to get more than the common market-price, simply deprives him of that sale. He eliminates himself as a seller in respect to that unit.

This condition of two-sided competition is lacking in countless cases and in many respects in the business world. The slightest lack of homogeneousness in the goods to be sold breaks the market up into more or less separate markets, and there is a chance for the seller to sell the different qualities at different prices, still, however, at a competitive price, alike to all for the same quality.

§ 9. **Borderland of monopoly.** Ownership of a particular knife, pencil, book, makes one the unique seller of it, but confers no monopoly power, as the power of substitution is practically absolute; the welfare of no one depends in any appreciable measure on that particular pencil. The simplest substitution a buyer can make, ordinarily, is that of a commodity of *the same kind*, offered by another seller. The effective limitation of the competitive seller is that if he tries to charge more than the fair market price, the buyer is able to buy of some one else.

In many enterprises in this same manner the surplus of selling price over costs as a whole is ruled by a very strict competition in the long run, and yet the prices of the separate products of the enterprise have the appearance of being

quite noncompetitive. The organizers of an entertainment, whether for private profit or for charity, hire a hall and assume the expense of the entertainment, the whole cost becoming thus a *fixed charge*. The prices of the various seats are then fixed with a view to getting the maximum total receipts. As regards that particular entertainment there is literally a monopoly. If half the seats are likely to be empty it will not "pay" to reduce the prices so low that all the seats could be sold. That might cause the price to be a negative one—payment for attending. It pays better to have a graded scale of prices to different parts of the house, and let some seats go unsold.

These examples serve to show that in a literal sense every man is the exclusive seller of the identical thing he has to sell and yet may have no monopoly power to raise prices above a normal, competitive rate. He may withhold the sale-good or place any reserve valuation upon it that he pleases, and a customer must pay that or go without that particular unit of labor or product. But this in most cases gives to the seller a quite negligible degree of power to influence price, and in many other cases where there is some power, there is no motive. There is, therefore, despite some measure of power to restrict supply, no exercise of the power sufficient to constitute a social problem of monopoly.

§ 10. **Difficulty of departing from average costs in competition.** Consider the case of a manufacturer who has no advantages not open to capable competitors and who can sell his small and easily transported products over a wide area. Such products, which by their nature seem typically competitive, are shoes, hardware specialties, writing tablets, etc. The manufacturer makes and sells them through agents both to wholesale and retail merchants, realizing a good average profit on the whole. Let him apply the principle (paradox) of price cutting to one pattern and sell it at a price which is nearer to bare cost. He will sell it more easily but it will contribute little or nothing to profits except as it may be an advertise-

ment, "a leader." Another pattern gives a large unit-profit, and is "a money maker." This will be the special target of competition, and will be more difficult to sell. If each competitor has his leaders, keen buyers can make leaders a good share of their purchases. Thus real competition searches out each inconsistency of cost accounting and is constantly leveling down the "money-makers" to a normal profit. Again and again a growing and seemingly prosperous business fails. The management have produced and sold the goods, but have cut the margin of profit too close. Meantime other more conservative competitors, trying to maintain prices, have been pushed almost if not quite into bankruptcy. Many a firm with a stable policy, a golden mean between rash and timid, has passed through many such an ordeal, and has won a substantial success through generations from grandsire to grandson, while competitors have risen and fallen.

In a competitive market, there being several sellers, the buyer stands ready to take from *any one* of the sellers. If any one of the sellers, whether formerly marginal or not, dropped out, and no one took his place, the price would rise. But the very essence of a condition of competition is this, that it *would not pay* any one seller to drop out for the purpose of raising the general market-price. He would lose more because of withholding these units (or ceasing to produce them) than he could gain by the *additional* profit he would make on the units he continued to sell. He has, virtually, to take the market-price as a fixed fact for the time, so far as he is concerned, and to decide whether *at that price* and the profit it yields him, he cares to continue selling. To put the same thing slightly differently: if he does not continue, other competitors stand ready to sell at the same price, or at a price so little higher that *he* will not profit on the whole by the change. His limitation of production yields a net gain to his competitors but a net loss to himself.

CHAPTER 31

MONOPOLY-PRICES; LARGE PRODUCTION

§ 1. Tests of monopoly control. § 2. Uniform monopoly-price in relation to costs. § 3. General principle of uniform monopoly-price and cost. § 4. Temporary and limited monopoly and discrimination. § 5. Theory of discriminatory monopoly-prices. § 6. Problem of the economy of large production. § 7. Economy of labor in large production. § 8. Economical use of machinery in large production. § 9. Economy of buying and selling in large quantities. § 10. Certain limitations of large production. § 11. Certain disadvantages of large buying and selling. § 12. Large production and the two types of prices. § 13. Monopoly element in price-fixing.

§ 1. **Tests of monopoly control.** The essential condition that distinguishes monopoly from competition is the buyer's lack of the power of substitution of one seller for another. The test of the degree of monopoly control is the seller's power to continue raising prices without thereby driving enough buyers to other goods or to other sellers to prevent his making some net profit by raising the price. A seller is competitive when he must take the general market-price as a fixed fact, and can decide only whether and how much to sell at that price. A seller is a monopolist when he represents such a large proportion of the offers that he may withhold a part, raise the market-price, and make a larger profit on the smaller sale. The competitive seller makes his profit by selling all he can at the market-price; the monopolist makes his profit by selling less and altering the whole price equilibrium.

Ownership of an important fraction of an entire species of goods may give some power to affect price. If the control is slight, a very small rise of price will bring in competitors.

The monopoly profits in this case either must be very small or they will be very brief. Those outside, controlling a large supply, will be tempted by large profits to market it at once and to increase it as fast as possible. One owning a large part of the desirable building sites or houses in a town may gain by occasionally letting one stand vacant in order to drive better bargains with tenants. A trade-union, controlling most of the labor supply of one kind in a town, may gain as a whole by keeping some of their members unemployed at times. But the test of monopoly is that a gain results from a higher price and fewer sales. It begins at the point where there is a motive to limit the supply in accordance with the paradox of value. The control of an entire species of goods gives price-fixing power limited only by substitution of goods. Even tho one person controlled all the coal in any market, its price still would be limited by the substitution of wood, oil, etc. If there were but one possible source of meat supply, most people could live without meat, but if one person owned all food of every kind, control of price would be as complete as is conceivable. The monopolist would be the absolute despot of the lives of his fellows. The monopoly of great species of goods can thus be seen gradually to merge from one grade into another. Monopoly is a matter of quality as well as quantity. There is more or less of it in the different industries, and it varies over time and territory. The monopolist aims, just as the competitor does, to get the price that gives the maximum gain. The monopolist, however, is in a more or less favored position, as he can raise his price and yet retain enough of his customers to gain by the change.

§ 2. **Uniform monopoly-price in relation to costs.** Now the monopolist also in his sales is limited by cost, but not so often or in such a compelling way as is the competitive seller. Within the range of his monopoly power he may either sell his whole product at a price well above cost plus a profit or he may discriminate more successfully than can the seller exposed to competition, and thus sell all but a small part of his

product at a wide margin of profit. Let us see how monopoly price-fixing is affected by cost. The crude monopoly-price (see above, Chapter 8), is that which yields the largest total selling price (this giving the largest profit) only when cost is zero.[1]

The highest uniform price which it is to the interest of a monopoly to charge is that which yields the largest profit; that is, the largest difference between total price and total

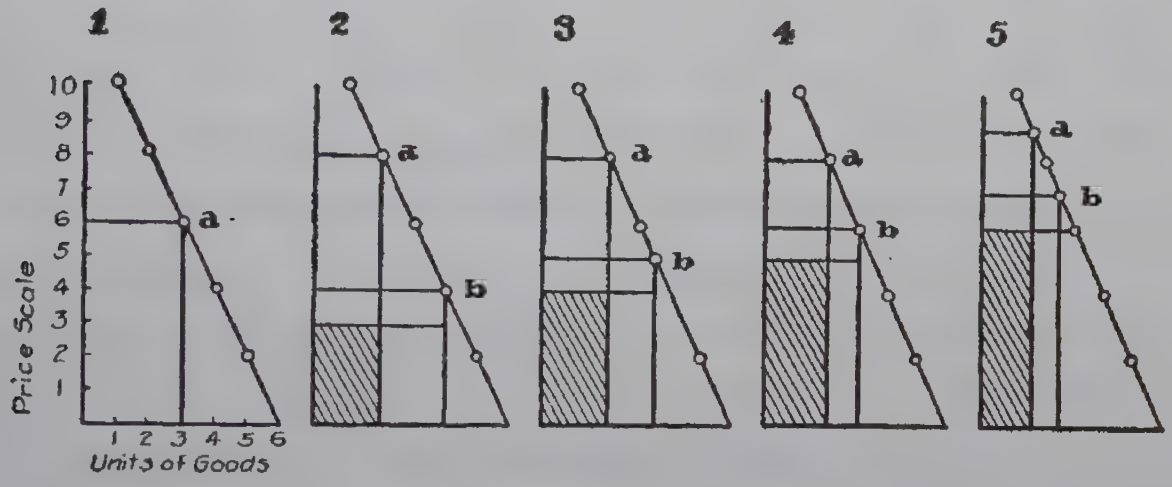


FIG. 47. MONOPOLY-PRICE, INELASTIC DEMAND.*

* In each case the line marked a is the level of monopoly-price, and b that of competitive price on the assumption that one unit is a fair competitive profit ("fair" meaning enough to give a motive to enterprise).

(1) Under the assumed conditions of demand as represented by the figure, crude monopoly-price is 6, sales are 3, and total profits 18.

(2) If cost is 3, monopoly-price is 8, sales are 2 and profits 10. Competitive price being 4, sales would be 4, and profits 4.

(3) If cost is 4, monopoly-price is 8, sales are 2, and profits 8. Competitive price would be 5 and sales 3½.

(4) If cost is 5, monopoly-price is still 8, and sales 2, but profits fall to 6. Competitive price would be 6, and sales 3.

(5) If cost is 6, monopoly-price is 9, sales 1½, and profits 4½. Competitive price would be 7, and sales 2½.

(Because of the very small numbers used in the scale, quantities have been expressed in half units.)

[1] It is represented by the largest rectangle (product of price per unit by number of units sold) which can be inscribed within the coördinates and the hypothetical demand curve. (Figure 14, ch. 8.)

cost. This is the product of the *profit* (not price) per unit by the number of units sold.[2] This never can be less than crude monopoly-price. In cases of very inelastic demand it may with certain ranges of price be no greater; that is, the

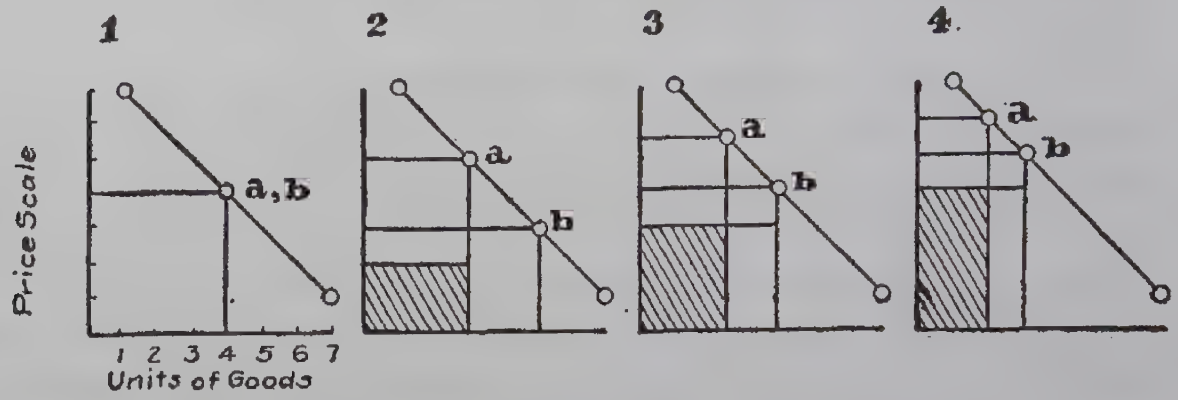


FIG. 48. MONOPOLY-PRICE, MEDIUM ELASTICITY.*

* Represents conditions as in the preceding figure, except that demand is somewhat more elastic.

(1) If cost is zero, monopoly-price would be 4. Competitive price must sink to nothing, but, if, with limited supplies, demand continues, the amount of the price would eventually all be imputed to cost (plus the minimum profit).

(2) If cost is 2, monopoly price is 5, sales are 3, and profits 9. (Competitive price 3, and sales 5.)

(3) If cost is 3, monopoly-price is 5½, sales are 2½, and profits 6½. (Competitive price 4, sales 4.)

(4) If cost is 4, monopoly-price is 6, sales 2, and profits 4. (Competitive price 5, sales 3.)

entire cost in such cases is a subtraction from what would otherwise be monopoly profit.

§ 3. **General principles of uniform monopoly-price and cost.** Inspection of Figure 47 and of the figure showing a medium demand (Figure 48) and a more elastic demand (Figure 49) reveals certain general effects. Except in some peculiar situations an increase of cost raises the theoretical monopoly-price and reduces sales, and decrease of cost lowers theoretical monopoly-price and increases sales. The more elastic the demand for an article, the less is the difference be-

[2] This may be represented by the largest rectangle that can be inscribed within the price line and the *cost line*, drawn above the base line, and parallel with it.

tween competitive price and monopoly-price. The less elastic the demand the greater the motive for monopoly, and the more elastic the demand the less the motive for a general monopoly-price. In some cases, where demand is very inelastic, the first increments of cost have slight effect either on monopoly-price or on the amount advantageously produced; cost within a certain range of monopoly falls largely upon profits and at certain situations may within a narrow range fall entirely upon them. The profits per unit being large, the price can not be raised without reducing sales. Choice will be made to give the largest profits (unit profit multiplied by sales). In this it is generally true that the greater the ratio of the cost

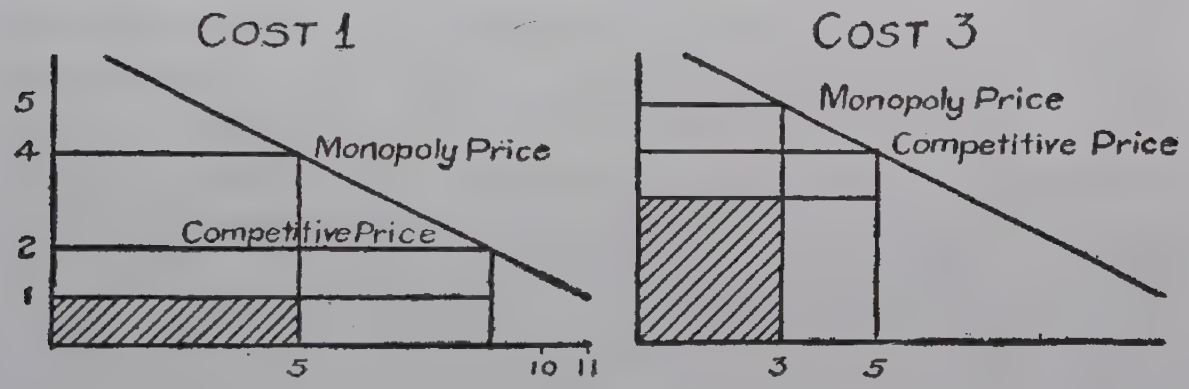


FIG. 49. MONOPOLY-PRICE, MORE ELASTIC DEMAND.*

* In comparing this with the preceding figures the general principles in sec. 3 appear.

to the crude monopoly-price (other things equal) the less is the range of monopoly power. The amount of sales that is possible with the higher monopoly-price is always less than with a competitive price. Monopoly-price at any level of costs from zero upwards is always higher than a competitive price (when costs are the same for competitors and for monopoly). We must note later the peculiar case where monopoly cost is lower; that is, where cost falls with quantity of output, and where large output is dependent on monopoly.

§ 4. **Temporary and limited monopoly, and discrimination.** The foregoing applies to uniform monopoly-price. This is sometimes the problem presented to the monopolist,

as to the manufacturer of a patented article in determining the advertised price of an article. Even then, however, some variation in price may be made by paying freights, giving cut prices to wholesale dealers in some localities, because of distance, or of peculiar condition of competition with a similar article, or on the principle of dumping, etc. Again and again the monopolist is tempted to depart from the uniform monopoly-price—to maintain it within the range of monopoly power, but to cut it by successive reductions as the conditions shade off toward competition, as they always do, more or less.

If, however, the better quality or the particular thing needed is in the hands of one seller, there is a temporary and limited measure of monopoly. For example, a cabman's business as a whole is usually competitive, as any one is free to engage in it if profits seem high. (There are, however, cases of monopoly through exclusive rights to certain locations, etc.) But in many cases the cabman has a distinct bargaining advantage over a passenger, as when no other cab is in sight, or on a rainy day. However, it may not always be "good business" to yield to the temptation to get the higher price. In a small town where men know each other, the cab fares charged to residents are not often discriminatory, for regular patrons resent this and the cabman would lose patronage. The sole druggist in a small town might occasionally get very high prices from particular customers at times of illness, but he would thus drive away much of his custom, and would tempt a fairer and less grasping competitor to come in. Public opinion develops as to what is a fair price to be asked alike of all. The customary price has both a moral and a legal sanction. Thus, when men and capital are free to come and go, there results an average or normal return for ability and agents of a certain grade. Prices come to equilibrium and continue pretty regularly to be virtually competitive, for they are determined by forces of competition, ever ready to appear where charging more than a normal supply price yields more than ordinary returns to active investors.

§ 5. **Theory of discriminatory monopoly-prices.** That a field of monopoly exists may be very certain, when it may be very difficult to find just who are the buyers who could be charged a higher price, and just how to make them pay it. If, however, in the measure that it can be done, it is done, there results a series of prices; highest to those buyers in the

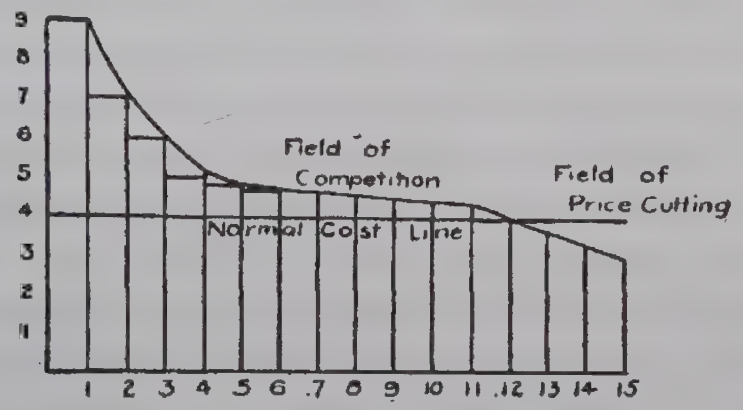


FIG. 50. PRICE DISCRIMINATION IN THE FIELD OF MONOPOLY.*

* The monopoly-price figure represents at its left, in the region of higher price, that field within which the monopoly under the particular conditions has a certain degree of control, and at the right in the region of lower prices, the successive levels at which either substitutes would be adopted or competitors would come in and take away the trade.

field of monopoly, low in the field of competitive prices, and possibly still lower in a price-cutting, rate-war field, where the monopoly is striving to drive some competitors out of certain businesses. (See Figure 50.) Assuming that the normal unit cost is 4, we may find that it is possible for a monopoly to get for a part of its product prices varying from 5 to 9, while elsewhere, in the fields of its competitors, cutting prices down to cost or even below. As some of its competitors were driven out of their fields, the range of the monopoly's control of the market would gradually widen. The shape of the demand curve would thus change.

The region from 12 to 15, would, as soon as competitors were ruined, be transferred to the other end of the diagram. Where prices had been very low they would become very high, and remain so indefinitely until competition again threatened.

Altho competitors see the lure of high profits, they fear the loss of their whole investment. Thus the threat of price cutting by the monopoly can paralyze potential competition for a long period following a price-war, as has often been shown by experience. The price-war policy should not be mistaken, as it often is, for typical competition, where the motive is to sell at a profit, however meager. The price-war policy is only undertaken to force a competitor to an agreement either to withdraw from the territory, or to maintain a higher scale of prices, or to sell out his business, etc. Usually selling at less than cost for a time is deliberately done with the purpose of selling at more than a normal profit later.

§ 6. **Problem of the economy of large production.** Size of the enterprise is a condition affecting unit cost in most important ways. There are in many cases advantages in large production; there are economies in large plants.[3] We have already studied the principle of proportionality (Chapter 12) and have seen how the proper proportion of the various factors to each other within the enterprise must be maintained. But further, the industry as a whole may be in better or worse proportion to the outside conditions, to the size of the market which it has a chance to supply. There is here a problem of the most economic size for an enterprise. As the size of the whole enterprise grows, the various parts (factors and costs) of it must grow in some proportion, but not in precisely the same proportion. Some parts do not need to increase proportionally to the output of the plant, and herein lies the economy. The advantages of large production should not be assumed to be necessarily conditioned on monopoly control, even where monopoly is the only condition in which it seems that a large enough unit of enterprise can be secured to get the full economies of large production. In such cases

[3] This often is spoken of as the "law of increasing returns," especially in manufacturing, and it is contrasted with the principle of diminishing returns which was believed to be peculiar to agriculture. This is an erroneous contrast. See note at end of ch. 34.

the two problems coexist, but must be kept logically distinct if confusion is to be avoided.

§ 7. **Economy of labor in large production.** The economy of large production is a particular case of the advantages of division of labor, and we need consider only a few of the features peculiar to it. There are certain technical advantages that are possible only by physical concentration; that is, by producing a large output in a single plant *at one place.* This makes possible the subdivision of tasks among a large number of men so that specialization of trades is carried to the furthest possible point of advantage. Each worker can become skilful at his work in less time, having but one thing to do, lower paid workers can be used on many parts of the work, and less time is lost in changing from one thing to another. Division of labor decreases in some ways the difficulty of supervision in larger factories, where the processes are divided, systematized, and made a matter of routine. The necessary inspection of the results is more rapid and easy. The lower cost of labor per unit of product in a large group as compared with a small group is especially noticeable in producing form-value. In certain cases it appeared that in making plows nine men working separately could average 66 plows each per year, while one hundred and eighty men working together will average 110 each per year, the output per man being increased 66⅔ per cent. In a rifle-factory with a daily output of one thousand, three men could turn out the same product that required eight men in a factory with a daily output of fifty, an increase per man of 166⅔ per cent.

§ 8. **Economical use of machinery in large production.** In these examples the saving in labor is not merely the result of increased personal skill, but of the use of machinery. There is economy in the use of machinery partly because with a large output more complex, more nearly automatic, machinery can be used. Even when the same kinds of machines are used they can be kept specially adjusted for each pat-

tern and process, whereas in a small factory much time and energy are wasted in adjusting one machine for various processes. The machinery in a large factory is thus better and more fully utilized. A comparison has been made of the machinery that would be used in one large ax-factory and in twenty-five small ax-factories having, it is assumed, the same number of workmen and the same total output, as follows:

	Twenty-five small factories	One large factory	Saving	
			Number	Per cent
Shears	25	3	22	88
Triphammers	100	20	80	80
Grindstone pits	50	37	13	26
Polishing frames	50	30	20	40
Total machines	225	90	135	60

The difference in cost due to machinery is not so great as these figures indicate, as the unused machine lasts longer; but in the small factory there is more depreciation from rust and decay, and a larger investment of capital for each unit of product. The average amount of stock and materials required in a small factory is greater in proportion to the output.

The cost of producing steam power is usually less per horse power in a large plant, because of automatic devices for unloading and handling coal and ashes, and because of greater efficiency of larger boilers and engines, etc. The use of power is, by the law of averages, distributed more evenly in a large plant than in a small one. Water power in some places may be developed at low cost per unit for a very large plant, by construction of large reservoirs, etc., where the cost would be prohibitive in a small plant.

§ 9. **Economy of buying and selling in large quantities.** Materials can be more exactly standardized as to quality when bought regularly and in larger amounts, and in many cases more cheaply. Shipments in carload and trainload and shipload lots make freight rates per unit less for large amounts even without illegal concessions.

The cost per unit of selling the product in many cases be-

comes less as the output increases. Advertising to make a name "a household term" would be ruinous for a small enterprise, but becomes a minute item of unit cost when divided by a multitude of sales. Often more orders come unsolicited as a business grows. A larger organization of commercial travelers, carrying a larger line of goods, and each covering a smaller territory more thoroly, makes the unit selling cost lower.

§ 10. **Certain limitations of large production.** Not one of these advantages is absolute and unlimited, and for most of them there are offsetting disadvantages which at length put an end to the economy of size. Labor can not be indefinitely divided, and when the factory is large enough to keep running one each of the best machines known, there is little or no economy in duplicating machines. As the factory grows the head manager can have less and less complete oversight; the eye of the master can not be over all as in the smaller establishment. This defect soon proves disastrous unless mended by more elaborate methods of organization, reporting, records, bookkeeping, etc., and the best of these prove expensive. In a small perfectly equipped factory making a patented specialty, and employing about one hundred men all of whom are personally known to the executive, the office "overhead" is only about 5 per cent; whereas in very large factories this item sometimes amounts to 20 per cent.

The cost of transmitting steam power by shafts and pulleys puts a limit to the economy of large steam power; and in many locations electric power is or can be supplied as cheaply to the small factory as to the large one. The natural limit of water power sometimes gives a maximum of power economy to a factory while it is small, and as it grows additional power from coal costs more per horse power. As large factories tend to create cities around them, land rises in value and higher wages must be paid the workmen in large cities. Small factories are constantly seeking out lower rents, taxes, wages, salaries, cheaper local sources of materials, cheap tho lim-

ited sources of power, and thus they compete successfully in many markets.

§ 11. **Certain disadvantages of large buying and selling.** In many cases growth in size is in some respects a disadvantage both in buying and in selling. To serve a local market a small establishment has certain advantages which no large competitor can equal. A factory using materials found in the locality, as lumber for wagons and furniture, wheat for flour, etc., has an advantage in costs by saving of freights and the cost of this item increases with the output. In selling, likewise, the nearest market is partially a protected field, to which distant competitors can come only at greater cost. It costs more to send agents further, and either prices must be reduced or freights paid by the seller, and this cost of overcoming the limits of the market finally must offset all the other advantages of large industry. These facts help to explain the survival and modest success of many thousands of retail stores, most notably grocery and drug stores, and of small factories such as grist mills, lumber and planing mills, wagon and furniture factories, fruit canneries, and thousands of small local shops for repairs and local orders in all the various crafts, working in gold, silver, iron, tin, wood, leather, etc. Further, it may be observed that the advantages of size are greatest where the production is the multiplication of a few patterns, most fully standardized; small production holds its place most successfully where there is need of individuality, variety, art, personal attention to the consumer's wishes, and prompt service that can be rendered only in a narrow neighborhood.

It is evident that most of these limitations to growth apply to a single local factory as regards its internal economies, but do not apply fully to the buying and selling of a combination under one management of geographically scattered plants. The federative plan has thus been applied to the "chain store" of various kinds—groceries, drugs, tobacco, shoes, clothing, five and ten cent, general department. It has been

applied to manufacturing on an enormous scale in such corporations as the U. S. Steel Corporation. These enterprises often, but not always, contain an element of monopoly. There are also cases where the necessary size for minimum cost is dependent on the existence of a condition of monopoly, as in most so-called "public utilities."[4]

§ 12. **Large production and the two types of prices.** If there is a situation where two or more establishments are able

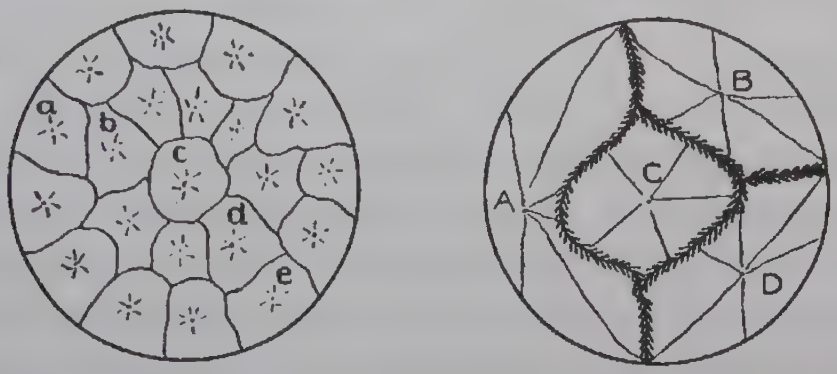


FIG. 51. AREAS OF SMALL AND OF LARGE PRODUCTION.

Each circle represents schematically an entire country, divided into markets, or regions of influence, each supplied by one establishment. At first it would appear as in the circle at the left, but after concentration had gone on to a large degree, the whole territory might be controlled almost entirely by a few large concerns such as A, B, C, and D A factory located at B, for example, would market its product in all directions (as shown by the small lines leading out from B) until it came into contact with the competition of A, C, and D. The limits of influence would be determined mainly by navigable rivers, railroads, supplies of natural materials, distribution of population, etc., but also by various psychic influences, such as habit, personal acquaintance, etc.

steadily to decrease unit costs by the economy of size, and there is normal competition among them, the result should be a decrease of price. When furniture is made in small shops, where most of the work is done with hand tools, the radius and area of the market are small; the improvement of transportation widens the markets and makes possible large production with its economies. These two conditions might be represented in a map, or ground-plan, as in Figure 51.

[4] The discussion of these cases must be left until the treatment of the trust problem.

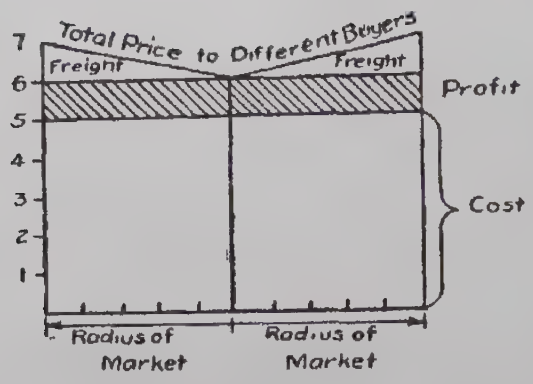


FIG. 52. PROFITS WITH F. O. B. PRICES.*

Prices both in the small and the large market may vary according to two main principles shown in Figures 52–55. (1) The prices may be uniform to every one at the factory, or at the nearest railroad station. Such a price is called f.o.b. (free on board, i.e., of the cars), the buyer having to pay the freight (Figure 52). The price to the various buyers' doors varies throughout the territory in accordance with the differences in freights, and at the outer edge of each area the advantage of buying in one market or the other falls to zero. The cost is reckoned by the maker to be uniform on all the output and each factory has by this rule what appears to be its natural, or normal territory. (2) The prices may be uniform to all buyers for goods delivered within specified areas (Figure 53); as one manufacturer of scales at Binghamton, N. Y., advertised widely for many years, "Jones pays the freight." Here the different units of products contribute unequally to profits, and the market extends to the point where price will cover variable costs and little more.

§ 13. **Monopoly element in price-fixing.** These two principles of price-fixing may be combined in various proportions, and especially in the case of goods not sold at an advertised price, but by agents, there is a strong temptation to depart from the f.o.b. price, not regularly but as

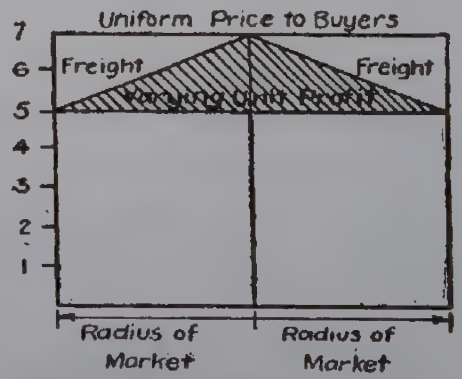


FIG. 53. PROFITS WITH "PRICE DELIVERED."

* This shows a cross section of prices to buyers at each point along the diameter of the market supplied from the factory at the middle. The next figure (53) is on the same plan, with the factory at the middle; but in the two following figures (54 and 55) the factories A and B respectively are at the edges of the figures, and only the radii of their markets are shown.

appears necessary to effect a sale. Factory B (in Figure 54) may maintain the f.o.b. price within its own natural territory, and cut prices so as to invade the rival's territory. If this is successful it may so limit the output of rival A, as to raise the average cost (Figure 55). The wider the territory over which a factory gets a market the greater its degree of monopoly control in the inner portions of its own territory. Instead of making its own costs a basis of price, it may make its smaller competitors' costs the standard. Establishment A's uniform price f.o.b. plus freight to destination is shown (Figure 55) on line ab. If B just meets these prices, a gross profit shown at bc would be possible at the center of its territory, falling to zero at d. Under such conditions the price in a large portion of the territory of large production would be much higher than before with smaller production, and the large profit would offer a motive to some one to start a small factory, even if its costs would be higher per unit than those of B. But the fear, the certainty, that prices would be reduced could, after a few lessons, effectually prevent such an extra-hazardous investment.

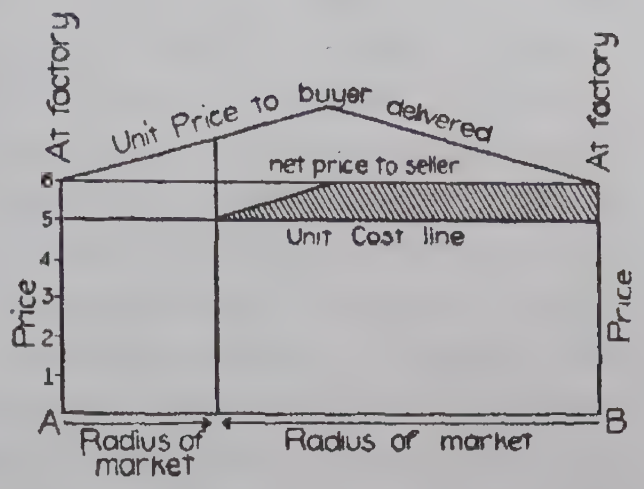


FIG. 54. PROFITS WITH PRICES PARTLY F. O. B. AND PARTLY DELIVERED.

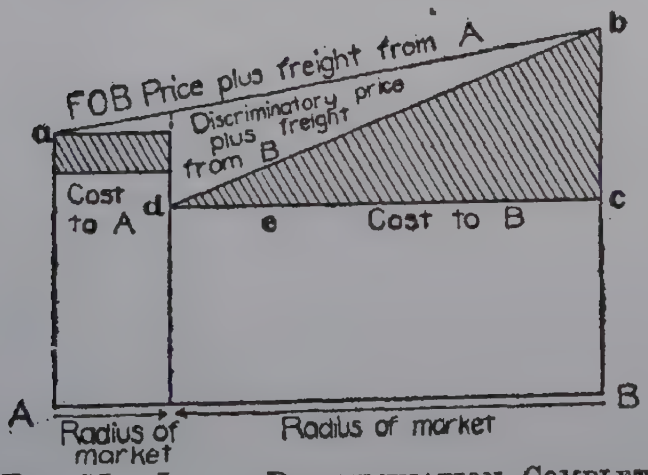


FIG. 55. LOCAL DISCRIMINATION COMPLETE.

This conquest of the market by one establishment can hardly happen in as simple and complete a way as that supposed. The competitor can play at the same game, and even tho smaller (as A in Figure 55) would struggle with like price-

tactics to retain or recover the border territory (that between d and e). Then the competitors are not always divided territorially. Smaller factories exist alongside of larger ones in districts well suited to the kind of industry (iron, textiles, woodworking, etc.), and maintain their existence by serving special classes of customers in a special way. They are latent competitors for related lines of business in case prices are raised much above those yielding usual profits. For most kinds of goods some substitutes, or some other source of supply, can be had, if prices are greatly raised by monopoly power. With all these limitations, however, there still remains a considerable measure of monopoly power in many cases, and a wide range of apparent caprice in prices. Any one of the large competitors by a change in his policy may greatly alter the price situation in a certain territory, introduce a period of what may be called abnormal competition and abnormally low prices, and bring upon himself and others either loss or an increased monopoly power. In either case there is a return to higher prices later. The search for a prevention of this irregularity constitutes the large part of the practical problem of monopoly.

PART VI

DYNAMIC CHANGES IN ECONOMIC SOCIETY

CHAPTER 32

THE PROBLEM OF POPULATION

§ 1. Introduction: static and dynamic problems of economics. § 2. A static economy. § 3. Dynamics and the social point of view. § 4. Rhythmic change and cumulative change. § 5. Some forces making for change. § 6. Population-change as a dynamic force. § 7. The Malthusian doctrine. § 8. Tendency versus actuality. § 9. Food limit versus moral restraint. § 10. Inadequate recognition of psychic factors. § 11. The overplus of blossom. § 12. Limit of the food supply. § 13. Eater and eaten. § 14. Features of the biologic stage. § 15. Primitive populations in the biologic stage. § 16. War and the pressure of population.

§ 1. **Introduction: static and dynamic problems of economics.** We have now to shift our point of view from that we have held thus far and, in concluding this volume, we are to survey our subject more broadly and with a somewhat different purpose. Our study of value began with individual choice and we have followed this process of individual choice in its manifold workings in the various problems of value and price. Men in their economic affairs are never absolutely at rest either in mind or in body. (See Chapter 4, especially section 6 on changes of desires and of valuations.) Desires wax and wane every day, and each day goods for daily existence and gratification must be secured through the labor and wealth of the community, even in the most unchanging form of society. Each individual is seeking to find the best adjustment for himself—a never-ending process. If for a moment (and in so far as) this is attained, there results an equilibrium for each individual, where he has no motive to change.

This process of the individual's adjustment is a part of a

larger adjustment; his change goes on within a larger process of change, that of society as a whole. There is a real need, however, to distinguish in many economic problems between that play of individual motives and forces which merely results in maintaining a *status quo,* and that which transforms the whole society into, or carries it to, a different condition. The one is a static adjustment, the other a dynamic adjustment, or process. To draw an analogy: the human body between about the ages of twenty and forty is constantly renewing itself, is the seat of ceaseless processes, yet is comparatively static, is changing only slowly. Earlier was the dynamic period of childhood's growth, and later will be that of age's decline. So an economy may through long periods show slight changes, and again, rapid changes either upward or downward in respect to any feature.

Where the whole economic situation is one of balanced forces, giving a comparatively stable adjustment of labor and wealth, and of prices, it is a static situation. And an economic society where this stable condition is normal is a static economy.[1]

§ 2. **A static economy.** Let us form a picture of a static economy. The number of persons is unchanged from generation to generation. Each year the number of births is just balanced by the number of deaths. The average natural ability of the new born must be just equal to that of the deceased, and that this should be so, either there must be no differences whatever in the natural ability of the families, or each class and family of the population must contribute in the same ratio to the number of surviving children. The industrial education and training of each oncoming generation is the same as that of the last, and this extends to every faculty of the mind and habit of life that affects thrift, industry, and choice of goods. Minor variations in particular families might offset each other and maintain an unchanged average. The population of a static economy is in quantity and qual-

[1] See note on Definitions at end of chapter.

ity like a reservoir of water fed by a pipe at an even rate and having an outlet of just the same capacity, so that the level and quality remain unaltered.

In a static economy the production of goods from year to year is the same in kind, quality, and quantity. Seasonal changes within the year cause many values to move up and down, but such changes as this—each year the same and completing their cycle within the year—are accounted a mark of a static rather than of a dynamic economy.

The area of land as well as the kinds of resources and the ease with which they are obtained, are unchanging. This means that they are used in an absolutely durative manner. Technic is stationary; the same kinds of tools, processes, and methods pass from father to son. Abstinence is solely of the conservative kind. Under these conditions the "normal" equilibrium of prices of commodities, labor of all sorts, uses of goods, capitalization, and rate of interest would be unchanging. Not that this equilibrium is maintained in a mechanical, automatic manner, in which men have no part. These levels of values and prices can be maintained only as a result of ceaseless choices, bids, and efforts on the part of all the members of the community. Men in a static society, each seeking to make advantageous choices, are just as much active factors in maintaining a level of prices as are men in a highly dynamic state. But given the static conditions of population, culture, resources, and technic, the subjective and objective conditions combine to give a static level of values.

Such a state of human society in this absolute degree never has been known, but it has been more or less approximated in many times and places. Examples are many primitive societies, such as the Esquimaux, native Australians, etc., continuing unchanged for many centuries; ancient Egypt and medieval Europe. Until the twentieth century China, indeed the Orient generally, has been synonymous with the unchangeable in social and economic conditions. "Better fifty years of Europe than a cycle of Cathay." Many features of a

static society are present everywhere much of the time. This conception is a type or norm by which we can study and judge the effect of each kind of forces separately, and not as they occur in haphazard combinations.

§ 3. **Dynamics and the social point of view.** Heretofore our study has been purposely confined as far as possible to the static aspects of the value and price problems. We were bent upon tracing the process by which individuals adjust their funds of wealth and labor to a general economic situation or level of valuation which they find and which they must accept as a fact given. We have recognized, however, that the individual finds himself compelled, again and again, to adjust his choices to a somewhat altered general situation, or in turn, may, by his action (discovery, invention, enterprise) start new forces into motion which will eventually alter the situation further. In the foregoing discussion of value and price, this distinction between *static* and *dynamic* forces, problems, principles, and societies has been more than implied. We have repeatedly referred to the more or less general changes as influencing the personal gains and losses of individuals, and even of whole classes of society. (See Chapter 27, section 13, note.) But in these references the purpose was still primarily to show the effects upon individual fortunes. We have now to take the larger view, and to consider these changes with reference to the effects upon the whole body of society.

Any state of economic forces may be studied in relation to value and price. If the situation were quite static, the price of every factor would be unchanging. A new cumulative factor would carry the level up or down in the period of dynamic change. There it would remain until other forces again raised it or lowered it to a new level, permanent so far as that one force can determine it.

§ 4. **Rhythmic change and cumulative change.** Into an economy that is characteristically static, disturbing influences are constantly entering. Some of these forces make a considerable temporary change which, however, is but rhythmic,

as it calls into operation counter-forces, bringing back the old level of equilibrium. Other forces are more lasting.

Dynamic problems in economics are not always easily distinguishable from static problems; but in most cases the difference is clear. Changes may range from very slight and temporary departures from a certain static equilibrium to

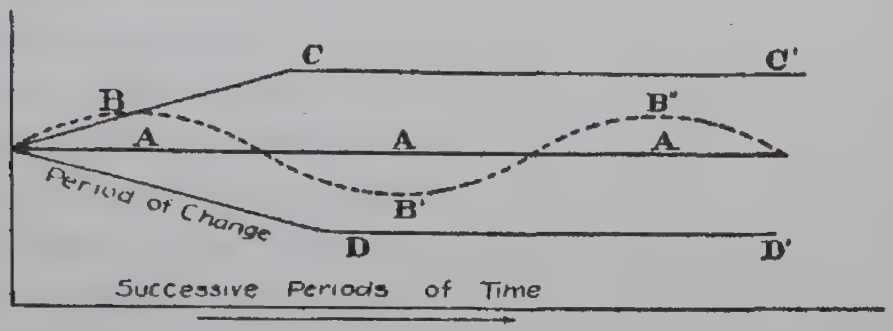


FIG. 56. STATIC AND DYNAMIC LEVELS AND CHANGES.*

* In a completely static state the level of prices and incomes would continue unchanged throughout the successive periods of time, as represented by the line AAA which remains parallel with the base line. The dotted line B which oscillates above and below A represents the rhythmic change. Line C represents a transformational (truly dynamic) change through a period of time to a permanently higher static level of CC'; whereas D represents a transformational change and a lower static level DD'.

those that are relatively great and lasting. Accordingly, two types of dynamic change may be distinguished. One is the rhythmic change, the stato-dynamic change, where the movement more or less regularly oscillates above or below a "normal equilibrium"; it is cyclical, in that the change runs a cycle above and below the normal and back to the starting point. This appears, in any brief period, to be dynamic, but is merely rhythmic when viewed over a larger period. Another type of dynamic change is cumulative, or transformational, or permanent, meaning that the forces at work are not such as will of themselves generate resistance (as does a swinging pendulum) sufficient to carry them back to the starting point.

§ 5. **Some forces making for change.** With many of these changes there is nothing that makes for permanent prog-

ress. There is a maximum and a minimum of prosperity, but the pendulum has a limited swing. There is in a rhythmically dynamic society far more of risk and uncertainty, of need and opportunity for judgment, of range for enterprise and alert management, than in a purely static state. None of these forces and influences change with perfect regularity, and even when the general average is pretty even from one cycle to the other, there is an element of the unpredictable any year about the total movement as well as about the details.

Only a few of the influences that bring about rhythmic changes are mentioned here. Political forces are constantly changing and bring economic results. In the past it has been almost proverbial that in each generation a nation must have a war, having had just time enough to recover from the last one. A vacillating policy of taxation, of foreign trade and tariff duties, and of economic legislation keeps business in a constant process of adjustment.

The discovery and production of the precious metals, gold and silver, follows always a somewhat irregular cycle. There result changes in the supply of money and in the scale of prices. The treatment of these particular questions is reserved for a later volume, but some other dynamic changes will be here considered.

§ 6. **Population-change as a dynamic force.** Every kind of dynamic change involves a shift in the ratio of the various factors of production in the community. On one side of this ratio is always the human factor; and the most general and far reaching of all dynamic problems is presented by changes in population. The effects of the saving and conservation of material goods, of waste, luxury, and destruction, of multiplying tools and machines and of improving them in quality by invention, all are relative to the number of people in that economy. If the number of people increases in exactly the same ratio as the area of land (having like qualities) that is brought into use, as the number of tools and machines, and as the whole economic equipment, it is as if no change took

place. But if any one of these factors moves faster or slower than any one of the other, or if other changes occur of a moral, political, or educational nature affecting the capacity, efficiency, and habits of choice of men, then the static equilibrium is disturbed. A new normal equilibrium is involved in every new setting of the population in its economic environment. Some of these changes may involve little more than a substitution of one material agent for another, such as electricity for steam, or cement for lumber; some of these changes affect the relative positions of various individuals without altering much the general or average level of income; but all of them involve more or less a shift in the general level of welfare, the most important economic change in the eyes of the social student.

We shall therefore take up first the problem of population, and ask what are the effects of a change in the number of people in and of itself, other things remaining equal. Then we shall consider what are the effects of changes in the objective factors, the area of land, its fertility, the discovery, use, and using up of natural resources, and the invention and increase of machinery. Finally we shall consider the subjective factor, human nature, in the use, saving, and accumulation of wealth.

§ 7. **The Malthusian doctrine.** The subject of population was brought into prominence in economic discussion by the writings of Malthus.[2] Before that some thoughtful comments had been made here and there, but it had been generally assumed that the larger the population the better for the country. Malthus, an interested student of contemporary projects of social improvement, was struck by the significance of some facts of observation and of history, and arrived quickly at the conclusion that the excessive growth of population is the cause of much of the misery and poverty in the world.

[2] An essay on the principle of population, as it affects the future improvement of society, by Thomas Robert Malthus, London, 1798. Second edition, 1803.

He believed also that this excessive increase would be sure to occur in a state of communism, and would alone be sufficient to wreck the ideal societies which the reformers of that period of the French Revolution were fond of picturing.

This was the general idea, but in some respects the thought was hazy and there is even yet room for discussion as to just what the Malthusian "principle of population" is. Some think it is expressed in the proportion of the opposing ratios; population has a tendency to increase in a geometrical ratio, and food in an arithmetical ratio. Thus, says Malthus, while food increases 1, 2, 3, 4, 5, 6, etc., population increases 1, 2, 4, 8, 16, 32, etc. This was the thought of Malthus: that population was always "pressing upon" the means of subsistence, and keeping large numbers on the verge of want.

§ 8. **Tendency versus actuality.** "Tendency" of population does not mean here an actual movement, for self-evidently population could not increase in such a ratio, for each individual mouth must have additional food. When population has reached 2 its rate must slacken, for one fourth of the total population in the next period would starve, or, distributing the food evenly, all would have to live on an even scantier diet, until pestilence, the effect of want, reduced the numbers. "Tendency" in respect to population meant *latent* possibility of the population reproducing and multiplying itself provided food increase kept pace; tendency in respect to food meant *actual* possibilities of the food being increased by the additional hands working on the same area of land.

Bearing in mind this ambiguity the principle may be expressed apart from the two ratios as follows. Population has a tendency to outstrip means of subsistence, with the result of poverty, misery, and famine. Tendency here if carefully examined is seen to be a very complex idea, neither a simple force, nor an actual increase of numbers, but a combination of the physiological maximum of birth rate, of the natural unlimited philoprogenitive impulse, and of adequate care and sustenance to rear the enormous number of children

that would be born under these supposed conditions. But there can not be food enough, hence misery and death. "Tendency" is what would happen if there were food enough, but in reality population can not increase beyond 2, the limit of the food supply. Likewise, in reality, the food can not increase beyond 2, for the increase of food from 2 to 3 is merely what would happen if twice as many hands could be put to work upon the same area, as in fact they can not be. Hence it is implied in the argument of Malthus (tho he does not clearly express it) that there is in any country a natural point of equilibrium between population and food which in the figures he has chosen as illustrations must be at 2 and 2. Evidently the food supply depends upon the stage of the arts of food production. As society changes from hunting to agriculture, from hand culture to plowing, etc., the food possible on the same area with the same labor increases, but population would quickly increase to this new equilibrium, of 3, 3, or 4, 4, etc. Population can not actually increase much beyond that point, for disease and other ills will then set in and again reduce the numbers.

Hence in Malthus' view the law of population, expressing the relation of the number of people to the actual food, is essentially rhythmically static. Population moves in cycles up to and slightly beyond the quantity of food it can produce, then is cut down by some catastrophe, and again slowly rises to the former equilibrium. Any margin, or surplus of food production made possible by a cumulative dynamic force changes the normal static level around which population thereafter oscillates. Malthus shows by many historical examples how again and again war, or the chance failure of crops, or pestilence has greatly reduced the population of a country, and how almost invariably this loss has been made up by a rapid increase in numbers in a single generation up to the limit of the food supply, followed by another period of stationary numbers.

§ 9. **Food limit versus moral restraint.** Another notion

very unclearly expressed and doubtless very cloudy in the mind of Malthus was the nature of this limit of the food supply. He assumes that there is such a limit at each time and country, but nowhere carefully analyzes the idea. He vaguely implies that it is all the food that the people can get, and his principle of population usually has a materialistic, a fatalistic character, with its picture of a limited food supply predetermined, in a way not quite clear, by forces outside of the choice and control of men, and setting the subsistence limit to the total population.

Yet in making his main argument against communism he shows that at least those families with private property do not put their whole incomes into food, but keep their numbers down, and direct toward other things than food a large part of the agents they control. This choice, or quality of mind, is recognized in the first edition of the essay and in the second edition is named moral restraint. A psychological factor enters here to take a place alongside of the materialistic factor, and the two never are reconciled by Malthus. Moral restraint, Malthus seems to think, is limited to a small section of the population, does not act upon the masses, and plays no appreciable part in explaining the total population of the country. He still thinks of population on the whole as regulated by the food supply. Yet Malthus does not think it useless to advise the working classes for their own welfare to postpone marriage and thus limit the size of their families. This notion became the starting point for the propaganda called neo-Malthusianism (which has advocated proposals very different from that of Malthus) to prevent very large families among the working classes.

§ 10. **Inadequate recognition of psychic factors.** Indeed the work of Malthus is replete with suggestions and with keen observations of history, not sufficiently analyzed or organized, and often expressed in ambiguous terms. The Malthusian doctrine of population has been the center of a continuous, and often bitter, controversy ever since its appear-

ance, both as matter of economic theory and as to its bearing upon radical social reforms. Because of the features in it we have just noted it is futile now to line up for or against Malthusianism. Hardly any two persons mean just the same thing by that term. We may agree that Malthus got hold of a great biological principle without understanding its full bearings. Darwin was struck by this in reading Malthus' book, and made it the starting point of his great doctrine of natural selection in explaining evolution. Since 1859, therefore, we are in a position to see the subject in much broader perspective. It is best therefore to put aside from our thoughts prejudices and controversies clustering around the Malthusian doctrine, and to find a basis for a doctrine of population in the ideas of modern biology and psychology and in the statistical facts of our times.

§ 11. **The overplus of blossom.** A doctrine of population is the grouping and explanation of the various influences that combine to determine the number of people in the several localities and in the world as a whole. The most fundamental fact in the doctrine of population is the surplus of life germs. In every species of living organism, vegetable or animal, the production of germ cells in each generation is vastly greater than the number that develops into living offspring. Yet the number of offspring born is much greater, in most species vastly greater, than would suffice to maintain the number of living individuals undiminished if all the young lived to maturity. Each species has an average or normal birth rate, great or small. Insects produce thousands of eggs each, fish produce hundreds, the rabbit a score of young in a year, and the elephant but one in three years. Clearly there is a general inverse relation between the intelligent care that the parents of any species give to their offspring, and the number of life germs produced. Nature economizes the forces of the species by a gradual reduction of the real surplus, but always leaves what the engineers call a "factor of safety." There are so many chances of accident, that if the number of germs

is enough only in favorable conditions, the species will become extinct under any conditions in the least unfavorable.

§ 12. **Limit of the food supply.** These myriads of seeds seeking for a chance to germinate, these myriads of young in every species seeking to survive, can not possibly grow to maturity. Even the slow-breeding elephant, with a period of gestation of three years, and producing one calf at a birth, would cover the entire earth and leave no standing room in a few centuries if every calf born could live to maturity. In how much briefer time would the fast-breeding animals and insects cover every foot of the earth! The limit of the food supply alone would prevent this. This has been demonstrated repeatedly when herbivorous animals have been placed on an island from which they could not escape, and where there were no large beasts of prey. This demonstration was made on an enormous scale when the rabbit was introduced into Australia, that peculiar and long isolated continent containing none of the rabbit's ancient enemies. The rabbits increased and devastated great areas, and tho they have been hunted, trapped, and poisoned by the millions, and great numbers of them have died of starvation outside the wire fences erected to stop their progress, they still continue to be a pest. If there were no other limit earlier interposed, this ultimate limit of the food supply would quickly check the increase of any form of animal life.

§ 13. **Eater and eaten.** The destruction of one kind of animal by another limits numbers in another way. The number of lions is limited by the number of their prey in the region where they roam. The number of deer, therefore, is limited in two ways, by the amount of their food and by the number of lions which catch the deer. The more numerous the lions, the fewer the deer; the fewer the deer, the greater the supply of vegetable food; as the pressure increases on one side, it decreases on the other, until an equilibrium is reached. Some carnivorous animals will in times of great hunger eat the weaker members of their own species, even their own

young. The actual limitation here is thus not starvation, but violence induced by hunger.

Geology tells the story of a slow and steady change that has gone on in the earth and in the species of animals that inhabit it. History records some rapid changes due to convulsions of nature or to interference by man with the natural conditions. But the usual condition is an equilibrium of numbers, long maintained. Tho each species of animal has a capacity for unlimited multiplication, throughout nature each keeps its customary place, changing little despite its efforts to increase and to crowd into the habitat of other species.

§ 14. **Features of the biologic stage.** Every species of animals thus presents the problem of the adjustment of numbers to environment.[3] Among wild animals this adjustment is in the biologic or instinctive stage, which is characterized by these features: (a) A physiological factor, the physical capability of developing reproductive cells, and of nourishing and protecting them up to the time that they become separate living beings through various processes in the oviparous and viviparous animals. (b) A psychological factor, the instinct of reproduction impelling to the realization of this physiological factor. (c) An absence of any knowledge or understanding of the relation between the instinct and the birth of offspring, and consequently the lack of any attempt to restrain or regulate the birth rate. (d) "The physiological maximum birth rate," being the number of births relative to the number of individuals capable of reproduction, that results from the unhindered operation of the two prime factors, physiological and psychological. (e) A certain degree of parental care after birth, normal to each species, to help the young through the early period of life. (f) The survival of the individuals thereafter depending on their inherent strength, vigor, and habits of life (including gregariousness

[3] This is sometimes for convenience called the problem of "population," altho this is taking liberties with the derivation from *populus*, people.

and coöperation), and on the objective conditions of accidents, disease, food supply, rivals, and enemies.

§ 15. **Primitive populations in the biologic stage.** The long life of the human race on this globe has been spent almost entirely in this instinctive stage of population. In many savage tribes when first visited by European travelers, the physiological maximum birth rate seems to have been nearly attained. In some tribes it was well nigh normal that a woman of forty years of age had given birth to twenty children—yet those tribes had only a stationary population. Every Esquimau girl is married in her 'teens and carries a baby on her back each summer, yet the population of Esquimaux does not increase. To the simpler native peoples even to-day the nature of birth is a mystery (paragraph (c) above). A recent scientific observer of the Australian tribes found them still in this state. Every girl is married, and every widow is remarried within six weeks after the death of her husband. This is the biologic stage of population, remarkable in that with a maximum birth rate the total population is either stationary or merely rhythmically changing.

Few human societies known to us are so primitive that they have not passed this stage, but many societies have risen only little above it. In most savage tribes, where starvation, disease, and war are constantly at work, the difficult task is to maintain the population. The birth rate is enormous, but few of those born arrive at maturity. It would be hazardous to tribal existence under these conditions to limit the birth rate. The custom of the adoption of captives from hostile tribes is wide-spread, because the efficiency—the very survival—of the tribe depends on keeping up its number of warriors.

§ 16. **War and the pressure of population.** War is the normal condition of most primitive tribes. Its cause usually appears to be standing feuds and ancient enmities, but the deeper and abiding economic cause is the struggle for hunting grounds, for pasturage, and for control of natural resources. When resorting to war as the rude remedy for over-

population, mankind is hardly above the animals, who fight for food against other species of animals or against their own kind. Hunting, fishing, or pastoral people, or those in the earlier stages of agriculture, require a large area for a small population. Distant excursions and frequent forays, when food fails, develop rival claims to favored districts, and war is the only settlement. Fighting under these conditions is an activity of such economic importance that much of the energy of the tribe must be strenuously given to it. The ceaseless loss of life in savage wars is almost incredible to modern minds. The successive invasions of the Roman Empire by the Teutonic tribes, and the later inundations of medieval Europe by the fierce pastoral tribes of central Asia, were undoubtedly due to the increase of population and the outgrowing of resources by these barbarian peoples, or to the failure of their food supplies because of seasonal or of climatic changes.

NOTE

Definitions. Statics (*status*, state, stationary) is that phase of a science which has to do with an equilibrium which must result in time from the existing group of forces, operating in unaltered magnitude. Dynamics (dynamic force, movement) is that phase which has to do with the changes in process as the result of new or stronger or weaker forces, which are more or less permanently unsettling the static equilibrium and are carrying the point of normal equilibrium itself to higher or lower levels. The terms static and dynamic in economics, therefore, may be applied to forces, prices, equilibriums, problems, situations, and economies (altho the forces may meet with increasing resistance that at length puts a limit to their effects, as the resistance of a spring balance checks the weight at a certain point). The change may be either progressive or retrogressive, and a higher or a lower level may be reached and maintained until some quite different force coming from another direction is operative. There are changes that in a brief view appear to be cumulative, which on longer study are seen to be rhythmic. Again and again men have been forced to revise their judgments, either hopeful or discouraging, of current tendencies, after time had enabled them to see a larger segment of the curve of change returning to its former level.

CHAPTER 33

VOLITIONAL DOCTRINE OF POPULATION

§ 1. Volitional control; beginning and development. § 2. Volitional control and private property. § 3. Class differences in volitional control. § 4. The standard of life. § 5. The quality of population. § 6. Decrease of the successful elements. § 7. The menace to progress. § 8. The net resultant of population. § 9. Volitional control decentralized. § 10. Conclusion on Malthusianism.

§ 1. **Volitional control; beginning and development.** The action of mankind with relation to population gradually changes from merely instinctive to volitional control. By volitional control is meant any purposeful act of mankind by which the effects of the biologic factors determining the birth and survival of children are weakened. This may be done directly or indirectly in a great variety of ways, by individual men or women or by social customs, beliefs, and institutions which individuals share and which influence their actions. One of the crudest, earliest, and most general methods is the destruction of offspring before or after birth. The student of savage races finds in the methods applied to prevent the birth of children an almost inconceivable brutality. Infanticide was practised in ancient times among the most advanced peoples, as, for example, in Sparta and Rome, where not only deformed and weak children, but unwelcome ones, were destroyed. The practice is permitted even to-day by public opinion among some classes in the densely populated districts of the world. It is one of the dark spots on our own civilization.

In all savage tribes marriage is surrounded by ceremony and in many by economic obstacles. Usually the young man

is unable to marry until he has become skilled in all the arts and learned in all the traditions of the tribe, and has proved his prowess in the hunt and in battle. It is the merit system with a qualifying examination for matrimony. Even then the young man must have enough pelf to buy a wife from her family, or (in exogamy) must steal her from a neighboring tribe or clan (not being allowed to marry within the clan). In modern days every artificial taste and sentiment that encourages bachelorhood or spinsterhood is an element in volitional control. Postponement of marriage (as recommended by Malthus) beyond the natural mating time, is one of the chief methods of volitional control. It is rare that the motive for postponing or altogether avoiding marriage is directly and immediately the wish to escape parenthood; now it is religious zeal (monasticism and celibacy of the priesthood); again it is disappointed sentiment; here it is conflicting duty (education, family ties); and there it is the individual's selfish wish to retain an undivided income for his own enjoyment. By countless strands of motive in the form of sentiments, social institutions, and interests the primitive impulses of humanity are firmly bound; and in varying degrees, in different classes, the enormous possibilities of reproduction are controlled by human volition.

§ 2. **Volitional control and private property.** Along with enmity for other tribes is found in many early societies an approximation to tribal communism. A condition of communism means that all enjoy together when food and wealth are abundant, and all starve together when food becomes scarce. In truly communistic conditions, if population increases all must sink together into want. Private property alters the nature of the struggle for subsistence and of the motives for limiting population. Society divides into a number of partially independent classes or family groups, each holding its share of wealth apart, not in common with the tribe. The pressure of increasing numbers upon resources is confined by individual industry and by private property to special por-

tions of the population. A society with private property is like a ship divided into a number of water-tight compartments. The worst effects of famine, the growing want of food due to growth of numbers, the increased disease and starvation, are confined to the propertyless members. Both the rewards of industry and the penalties of idleness, incompetence, and improvidence are made more definite and calculable. This affects volitional control of population in two ways: it strengthens the motives for the production of wealth and for abstinence by individuals and in family groups; it gives a motive for the limitation of the number in the family, the consumers of the wealth. A smaller family with larger resources means a wider margin between numbers and misery, and less "pressure of population upon subsistence." This converts the problem of population from a material one of a balance of food and physical needs, to a psychic one of a balance of motives in the minds of men. When this stage is reached, the extreme objective limits either of the birth rate or of increase of population are no longer attained in the well-to-do classes; and at length every class down to the most improvident becomes in some measure affected by these motives.

§ 3. **Class differences in volitional control.** No wonder then that volitional control is effective in very different degrees in different families and industrial classes. The possession of property is both a sign of forethought and an incentive to it. Concern for the welfare of children is one of the most powerful motives, especially after social distinctions become marked. It may become abnormally strong, leading parents to sacrifice their own welfare or their own lives foolishly for their children, as is done often in the accumulation of property. Among the classes with property the provision for the children depends not only upon the amount of wealth, but upon the number among whom it is to be divided. It is simple division: wealth the dividend, number of children the divisor.

Among the poorer classes very different motives operate. After the first few years of the children's lives the parents' incomes are increased by the earnings of the children, both on the farm and in the factory districts if the laws do not prohibit child labor. Moreover, when the children are grown, their incomes (wages) will depend on the general labor market, not on the number of their brothers and sisters. So according as the family income is mainly from capital or from labor, the motives of the parents differ.

This view is supported not only by general observation but by many statistical studies wherein the marriage rates, birth rates and survival rates of different states, districts, territorial divisions of cities, and industrial classes have been compared with the economic forethought as indicated by some phenomenon such as per capita wealth, taxes, savings, education, etc. The correlation between volitional control and the economic factor is remarkable when large numbers are involved. Those detailed studies have shown that volitional control is not as clearly dependent on the amount of accumulated riches as it is on frugality, prudence, or abstinence, as one may prefer to call it. The middle class of shopkeepers, artists, professional workers, and small capitalists, striving to get ahead, and to give their children a good education and a start in life, show as a class the maximum of restraint of population, having smaller families than either the richest classes or the poorest.

§ 4. **The standard of life.** The phrase, "standard of life," expresses the complex thought of that measure of necessities, comforts, and luxuries considered by any individual to be indispensable for himself and his children; that measure which he will make great sacrifices to secure. This standard differs from land to land, from class to class, and from time to time. In the Asiatic countries it is so low that it touches in large classes the minimum of subsistence. Despite adverse influences and a remarkable series of famines, the population of India in the last century under

English rule increased from two hundred millions to three hundred millions. Such a population "lets out all the slack" of income, and never takes up any. The great public works of irrigation, forestry, and transportation, and the development of industry under English rule increased production, made it more regular, and gave an opportunity for a higher standard of living; but much of this opportunity was used instead to permit the existence of a greater number of men in the same old misery. These facts have a bearing upon the question of Oriental immigration to America. The emigration of millions of the lower class laborers of China and of India from their native lands would leave no void in their numbers. Those races, while peopling their own lands constantly down to their own standard of living, have the power, if they are tempted hither in great numbers, to people this continent also to the same density. On the other hand, a people accustomed to a goodly income and to a large measure of comfort of surroundings is restrained from early marriage and large families by far different motives than the fear of starvation. When the increase of population ceases to be actually limited by objective restraints and is limited by psychic means, there is no telling how strong the new forces will become or where they will cease to operate.

The desire to maintain and raise the standard of life is the most effective motive limiting population in our society. The American standard of living, while it differs in different classes, is on the whole the highest found anywhere in the world. The increasing appeal to individual selfishness, the greater ease of travel and taste for it, the multiplied and costly pleasures and pastimes, make children a greater and greater burden. The conditions of city life call for greater sacrifice to support children, and give less value to their services in the home. In the greater cities are large areas where no family with a child can rent an apartment. Despite the increasing incomes of the masses of the population, the number of childless homes is increasing, and while the

standard of comfort grows, the size of the average family dwindles.[1]

§ 5. **The quality of population.** The quality of population is of quite as great import as its quantity, alike in its economic, its social, and its ethical results. The productive force of a population is not measured merely by numbers. "Who" make up the population at any moment is no more a matter of indifference than "how many." One new-born child, unintelligent, incapable, foredoomed to become a burden, represents a negative addition to society; another, with energy, thrift, inventive genius, comes to enrich and uplift his fellow men. Quality counts for much. Social progress is not necessarily the biological betterment of the native ability of men. The education of the average member of society is becoming yearly better; it is doubtful whether the innate capacity of a new-born babe in Europe and America to-day is greater than it was among our Germanic ancestors in Roman times. Indeed, the progress of the past two thousand years has been in social organization, in the enlargement and simplifying of the mass of knowledge which has to be reappropriated by each new individual, rather than in race-breeding and in quality.

Few thoughtful persons now hold the view that the race can be improved biologically, rapidly if at all, by the process of educating the individual. Education is cumulative in so far as it builds up a better environment into which other chil-

[1] Size of the census family in the United States. (Census, 1910, vol. pop. p. 1286.)

The term family as used in the census does not mean the natural or biologic family, but a household or group of persons, whether related by blood or not, who share a common abode, usually also sharing the same table. If a person lives alone, he constitutes a family; while on the other hand many people dwelling together in a hotel or institution are also treated as forming a single family. Nevertheless, these figures doubtless reflect a very large proportionate decrease in the average number of children per family, a conclusion corroborated by much other evidence.

Years	1850	1860	1870	1880	1890	1900	1910
Persons	5.6	5.3	5.1	5.0	4.9	4.7	4.5

dren will be born, but the betterment is not due to the inheritance by the child of the acquired knowledge and skill of the parent. If this question is open to dispute among biologists, it is only as regards a minute increment of improvement. Practically, selection preserves the better variations as they appear, and to eliminate the bad variations is the only means of improving the innate capacity of any species in any large measure. Many forces were at work in the past to lift man above the brute, and especially to increase the average brain-power of the human race. The weak, the ignorant, the incapable, in primitive societies were ruthlessly killed off. The strong, the sagacious, and the enterprising left the largest numbers of descendants.

§ 6. **Decrease of the successful elements.** Under modern conditions, volitional control is acting with the greatest force in the more capable classes and thus threatens to reduce the quality of the population. The successful elements of society are the less prolific. Large families were the rule among the capable pioneers of America; now they are rare except in the lower industrial ranks. The average number of children reaching maturity in the families of the American colonists was six; the average number to-day in families of colonial ancestry is about two, except in the rural districts of parts of the South and West. Since many of these children do not live to maturity, and of those who do survive many do not marry, the stock does not maintain itself in numbers. Much larger families are found among the poor whites of the mountains, the newly arrived immigrants in the cities, the negroes in the black belt of the South,[2] and, in general, those in the lower ranks of labor. Forces are at work to sterilize or reduce in number the elements of the population that are more prosperous and enterprising. The "new woman" movement, tempting into "careers," takes away from family life many of the women most worthy to become

[2] But not in the other parts of the country, from well recognized causes. See Figure 58.

the mothers of succeeding generations. Self-interest is at war with the social interest. The individual asks, "Am I bound to sacrifice my comfort and happiness to the general good?" The effect of this is a steady decline in the proportion of the population (referring, of course, only to general averages and not to particular cases) born of the successful strains of stock, and a steady increase of the descendants of the mediocre and duller-witted elements. This is a paradox, that the fittest to succeed industrially are, by that very fact, beaten in the race for biologic survival.

Democracy and opportunity favor this process of increasing the mediocre and reducing the excellent strains of stock. Caste and status in the past kept successive generations of capable men in humble social ranks from which only by chance some remarkable individual could rise. In a democracy, those of marked ability can more easily move into the better-paid callings and professions. This individual good fortune, however, reduces the probability of offspring. In the higher ranks of business and the professions are more bachelors and old maids than in the lower ranks, and fewer children are born to each marriage. It has been found that one fourth of the graduates of Harvard in the last generation remained single, and the average number of children of the married graduates is two. That group of men, therefore, has left only three fourths enough descendants to maintain its numbers, and as the population has doubled within the same generation, that class represents only three eighths as large a proportion of the American stock as in the preceding generation.

§ 7. **The menace to progress.** This sterilization of ability has cumulative results. If society were composed in equal parts of two distinct strains of stock, not intermarrying; if the total population remained unchanged in numbers from one generation to another (say each period of thirty years) but the superior strain contributed only three fourths of its own number, at the end of five generations it would have

sunk from one half to a little more than one eighth of the population. A period brief in the life of nations would serve to leave it an almost negligible factor in the community. There can hardly be a doubt that at present our society is *on the average* increasing more from the less provident, less enterprising, less intelligent classes. There has not yet been time for many of the cumulative effects of this process to appear. Progress is threatened unless social institutions can be so adjusted as to reverse this process of multiplying the poorest and of extinguishing the most capable families. The object of the eugenics movement is to introduce an element of rational direction into the process of perpetuating the race, so that disease, weakness, and degeneracy may be diminished, and health, strength, and superior capacity shall be increased.

§ 8. **The net resultant of population.** Whether the population on the whole shall grow, stand still, or diminish depends on the relative strength of contending forces making for life or death; on the one hand, those favoring a high birth rate and low death rate, and on the other those limiting births and survival. This control of the movement of population loses its cruder aspect and is waged in the realm of motive. More and more it is volition that controls in human society the growth of population; less and less it is the objective limit of the food-supply. Dire need resulting in ill-health and even in starvation is still acting in some portions of society, but less to-day than ever before. The growth of population in this stage is not "fatalistic," as there is no inevitable tendency to increase or to decrease. It depends on the interaction of a number of forces, clearly distinguishable, by which population actually is kept far within the limits of food resources. Human choice is the guiding influence, choice shared by every normal member of the community.

§ 9. **Volitional control decentralized.** Volitional control is not exercised by a central and unified despotism determin-

ing human action, but it is effected by motives of the most complex sort, diffused throughout society and acting upon every member of it. Volitional control, in its very nature, is decentralized. Each individual and family group, by its own choice, places limits upon its addition to numbers, decides how much margin shall be left between its standard of life and bare subsistence, and how it shall use the income which would permit earlier marriage and larger families on a lower standard of living. The whole population, it is true, is an arithmetic resultant of the population changes within the separate family groups; but large classes and districts show certain average differences, which continue for long periods with little change (e.g., the rural peasantry has a higher birth rate than the city artisans; French Brittany higher than the departments near Paris). There are easily observable causes for these differences among classes and districts, yet there is no organic connection between the parts, such as, for example, might make it necessary for Brittany to make up the deficit of the Parisian neighborhood in order to maintain a stationary population in France. In any community with a population stationary because of volitional control (e.g., France between 1900–1914) and not from objective checks (war, famine, etc.), it is both possible and probable that the population will begin to decrease. This must happen when the ideas, customs, ambitions, and practices of the groups which do not maintain their numbers, gradually spread to the groups which only a little more than maintain their numbers. The opening up of opportunities for young men to marry as population declines (as by farms becoming tenantless, houses vacant, etc.) retards the decrease of population, but the standard of living and individualistic desires may advance more rapidly than the incomes, and cause population to go on decreasing. A check to this movement can come, it would seem, only through changes in ideals as to social duties and race culture already foreshadowed, but too complex to be foreseen in detail.

§ 10. **Conclusion on Malthusianism.** In the light of the preceding discussion what is to be the judgment on the doctrine of Malthus? Can the question, "Was Malthus essentially right?" be answered with yes or no? It is best to decline to answer the question put in that way. His outlook on the matter was so different from ours, and the doctrine involved various elements some of which have stood and others have fallen. Let us distinguish. He was right in his assumption that the physiological maximum birth rate is excessive for modern conditions. The purely biologic parts of the doctrine of population have since his day been given a much broader justification. Man is physically an animal, and if he were not more than an animal mentally and morally, the adjustment of population to resources would be no different from the struggle of animals for existence. He was right in this hypothetical conclusion, and there are those who take this to be the most essential part of the Malthusian doctrine.

But Malthus himself did not look upon this as his principle—but only as a premise, a fundamental fact from which he reasoned. His "principle" was that there actually is and must be this pressure of population against subsistence. It involved the notion that the food supply, as a thing somehow outside of the power of men to control, determined the size of the population. It was offered as an explanation of misery, and as a prophecy of inevitable misery to come. This does not accord with past experience or with present conclusions of reasoning. Indeed, Malthus never rightly adjusted his idea of "moral restraint" to his ideas of objective checks. He never adequately comprehended the rôle of the volitional factor. He thought of it as modifying in certain circles, but not as transforming for whole populations the process of the adjustment of numbers to resources. He tried to keep his doctrine on a material basis, as the ancient philosophers put the earth upon a giant and a tortoise. He did not conceive of population as removed from this material basis,

suspended in space, held (as is the earth by gravitation) by the intangible forces of volitional control.

Finally, Malthus had no conception of the importance of quality of population and the way that quality modifies the relation of numbers to material resources. He did not appreciate the dynamic influence which the very pressure of population and its necessities may have in stimulating effort and invention. He conceived of population movements as rhythmic, but essentially static. His was a static doctrine of population. Only in his somewhat crude biologic doctrine (no small matter, however) has he stood the test of time. In all other regards his views have had to be greatly modified, corrected, and developed to fit the needs of modern thought.

CHAPTER 34

DECREASING AND INCREASING RETURNS

§ 1. Estimates of the world's population. § 2. Population growth in Europe since 1800. § 3. Increase since 1790 in America. § 4. Relation of population to resources. § 5. Birth rates. § 6. Death rates. § 7. Population growth and intensive cultivation. § 8. Law of increasing and decreasing returns. § 9. Increasing returns in the nineteenth century. § 10. Rhythmic changes of population. § 11. Cumulative dynamic economy. § 12. Individual and general adjustment to static conditions. § 13. Adjustment to dynamic forces. Note on Various meanings of diminishing returns.

§ 1. **Estimates of the world's population.** The movement of population can be known with approximate accuracy only where a census of the population is regularly taken. This was done nowhere until the end of the eighteenth century, and even now is done for only a small part of the world. In all other places and times, movements of population can only be estimated, usually from very insufficient data. It is certain, however, that in ancient times a considerable density of population was attained only in a few centers of empire (Egypt, Babylon, Persia, Greece, Rome, etc.), where peace, trade, fertile soil, comparatively advanced methods of agriculture, accumulated wealth, and extended political power with tributes from subject people were combined in an exceptional degree. Nearly the whole of the habitable globe was possessed by hunting tribes or by pastoral nations very sparsely peopling the lands. It has been estimated that the population of the earth at the death of Augustus (19 A.D.) was about 50 million.[1] Since 1800 there is more of knowledge

[1] The Italian economist Bodio's estimate is 54 million.

and less of guess work in the figures, which have been estimated as follows: [2]

	Population of the world; millions	Yearly arithmetic increase in preceding decade; millions	Percentage increase in preceding decade
1800	640	..	..
1810	...	..	..
1820	780	7.	10.
1830	847	7.	8.6
1840	950	10.	11.
1850	1,075	13.	13.
1860	1,205	13.	12.
1870	1,310	10.	8.7
1880	1,439	13.	9.1
1890	1,488	5.	3.4
1900	1,543	6.	3.8
1910	1,616	7.	4.7

Repeating the warning that these figures are mere estimates, it may yet be believed that a great increase had taken place between the first century and the year 1800, of which a large part, about half, had been in the Chinese Empire, numbering then about 300,000,000 people. But the most enormous increase occurred between 1800 and 1910, about one billion people being added to the world's population, the total in 1910 being nearly three times as great as it was in 1800.

The population of Europe is said hardly to have exceeded 50,000,000 before the fifteenth century [3] at which time England had about 2,500,000 people.[4] Population grew rapidly from the end of the fifteenth century with the increase of centralized government, better agricultural methods, foreign trade, inventions, etc. An enormous loss of life took place on the Continent during the Thirty Years' War (1618–1648), still a term of dread in Germany which, during that time, lost

[2] The first column was compiled from various authorities by Prof. W. F. Willcox, in his paper "The Expansion of Europe"; from which we have derived the yearly arithmetic increase and percentage of increase by decades.

[3] Mulhall's "Dictionary of Statistics."

[4] At accession of Henry VII, 1485 A.D. See Traill's "Social England," vol. III, p. 129.

through violence, pestilence, and famine about two thirds of its former population. Despite numerous wars the population of Europe, according to a widely quoted estimate, was 130,000,000 in 1761,[5] and was about 175,000,000 in 1800.[6]

§ 2. **Population growth in Europe since 1800.** Population increased in Europe at an unprecedented rate in the nineteenth century. It numbered about 175,000,000 in 1800, over 250,000,000 in 1850, about 390,000,000 in 1900, and 400,000,000 in 1910. Many things helped to increase the food-supplies available for Europe. The resources of the American continent were hardly touched until the great western movement of population began and new agencies of transportation brought American fields thousands of miles nearer to European markets. The improvement of machinery and of other economic equipment in Europe, and better methods of cultivation aided to increase production rapidly. Population followed, tho not with equal step. The increase has gone on at undiminished pace in eastern and southeastern countries but recently there has been a notable decline in the rate of increase in several of the countries of western Europe. France has been nearly at the stationary stage since the beginning of the twentieth century, and England probably will have reached it by the middle of the century. The great war begun in 1914 must, in the warring nations, greatly reduce the marriage rate, increase the death rate, and reduce the birth rate, until the end of hostilities. The men killed in battle are fewer than the children never to be born, who but for the war would have come into the world.

A stationary or declining population throughout Europe sometime after the return of peace is a possibility. But this does not destroy the significance of the fact that there is inherent in humanity a great potential power of increase, the realization of which would be disastrous, the limiting of which

[5] Estimate of Sussmilch, the famous statistician of the eighteenth century.

[6] Estimate of Levasseur, cited by Willcox.

either by crude objective means (famine, war, illicit measures) or by volitional means is inevitable. It does not disprove the great biologic proposition in the Malthusian doctrine.

§ 3. **Increase since 1790 in America.** The growth of the population of the United States since 1790 (the date of our first census) has been proportionally much greater than that of the European countries. But it has been in two respects different from theirs, and abnormal: in being so greatly aided by immigration (while many of them lost greatly by emigration); and in spreading over wide new areas of land, almost uninhabited before, instead of merely increasing the density of population on the same area of land.[7]

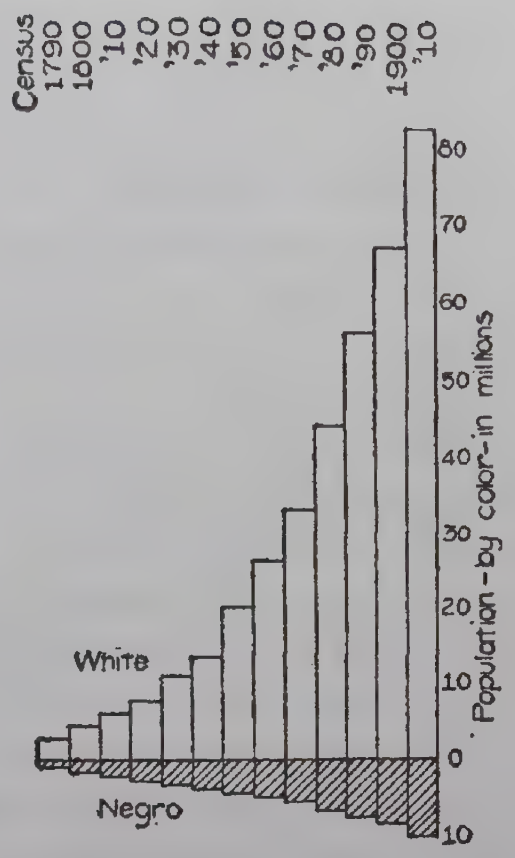


FIG. 57. POPULATION IN U. S. 1790–1910, WHITE AND NEGRO.

[7] Population of the United States at each census 1790 to 1910.

	Population millions	Per cent increase preceding decade	Density per sq. m.	Number added per sq. m. preceding decade
1790	3.9	...	4.5	..
1800	5.3	35.1	6.1	1.6
1810	7.2	36.4	4.3	—1.8 [b]
1820	9.6	33.1	5.5	1.2
1830	12.9	33.5	7.3	1.8
1840	17.1	32.7	9.7	2.4
1850	23.2	35.9	7.9	—1.8 [b]
1860	31.4	35.6	10.6	2.7
1870	39.8 a	26.6 a	13.0	2.4
1880	50.2	26.0 a	16.9	3.9
1890	62.9	24.9	21.2	4.3
1900	76.0	20.7	25.6	4.4
1910	92.0	21.0	30.9	5.3

a Census office's adjusted figures for 1870 and 1880, correcting supposed omissions in the census of 1870.

b The decrease in average density is explained in the text, p. 430.

The population the first three decades increased almost entirely *extensively*, moving toward an ever-widening frontier, spreading itself over a great territory. Twice did great additions of territory cause the average density to decrease (1800–1810 and 1840–1850). Cities, meantime, were growing, and decade by decade from 1850 on the growth of population was in nature more *intensive*. The increase in the number of persons per square mile in the first thirty years amounted to only one person; in the second (1820–1850) was 2.4 persons; in the third (1850–1880) was 9 persons; and in the last (1880–1910) was 14 persons per square mile. The average density increased 14 times as fast in the last thirty as in the first thirty years, having almost doubled between 1880 and 1910. A large part of our area is desert, greatly inferior to the sandy northern plains of Europe, and a large part is barren mountain (the Rockies), greatly inferior to the well-watered Alps, as a place for human habita-

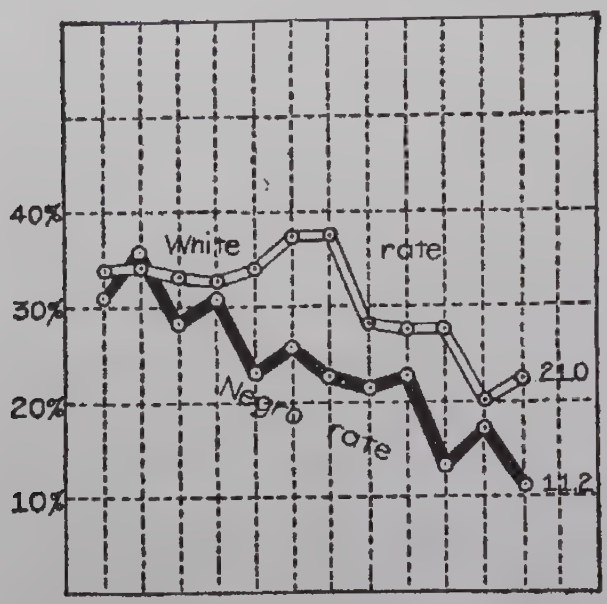


FIG. 58. DECENNIAL RATE OF INCREASE, 1790–1910.*

* The first rate shown is for the decade ending 1800, the last, 1910. The average rate for the whites until 1860 was around 35 per cent, but the trend since has been downward until in the last two decades it has been less than ⅔ as high as it was then; it would be much less but for the very large European immigration.

The rate of increase of the negroes has been less than that of the whites in every decade but one, and the trend of the rate has been downward since 1810. It now is about ⅓ of what it was in the beginning, and practically the whole of the increase is now due to the South Atlantic and South Central divisions. Elsewhere the negro population would be either stationary or decreasing in numbers but for the migration from the southern states (and some from the West Indies).

tion. Still the population of the United States is sparse compared with the countries of Europe.

§ 4. **Relation of population to resources.** We can account for this wonderful growth of population throughout the world only in the light of the increased power of production of wealth. The population of different countries, and of different sections of a country, is seen to bear a general relation to their resources. A community with a poor soil, little wealth, and no machinery is doomed to remain few in numbers. Mountains, districts poorly watered, the frozen regions of the North, are sparsely populated because natural resources are lacking. If food production alone is thought of there are apparent exceptions to this statement, but there are no absolute contradictions of it. A favored harbor may make possible a flourishing commerce on a rocky coast; an infertile soil may support a large population when great deposits of coal or iron insure, by exchange, great food-supplies. Productivity must be measured under modern conditions by the purchasing power that is possible in the environment.

The whole world has been coming more into the condition of political security, settled industry, and improved methods of production. The result has been a great reduction in the extent and severity of famines, an increase of the real incomes of the masses, and the survival of large numbers of people, young and old, who formerly would have been cut off. The increase of wealth, made possible by the new conditions, has gone largely to increase the number of people. The biologic factor in population is great and ever present.

§ 5. **Birth rates.** The increasing population has not been due to any general increase in the birth rate. In most countries where there are any records it has been decreasing, and in some cases more rapidly than has the death rate. The world's birth rate in 1911 is estimated to be 36.5 per thousand of population; that of the more advanced industrial countries is much less. In the quarter century between 1886 and 1912 the birth rate decreased in certain countries as follows:

	Birth rate		
	1886	*1912*	*Decrease*
Australian Commonwealth	35.4	27.2	8.2
Austria	38.3	31.4	6.9
United Kingdom	32.8	24.0	8.8
France	23.9	19.0	4.9
German Empire	37.0	28.3	8.7
Hungary	45.6	36.3	9.3
Netherlands	34.6	28.1	6.5
Denmark	32.6	26.7	5.9
Norway	31.1	25.4	5.7
Sweden	29.8	23.7	6.1
Italy	37.0	32.6	4.4
Spain	36.7	31.9	4.8

§ 6. **Death rates.** A general decrease of the death rate makes possible a growth of population even with a decreasing birth rate. The food production has been increasing and famines have been decreasing, while great improvements in medical and in sanitary science have at the same time been made. The death rate in a community is a rough index of its general welfare: the death of a large proportion of the children before they arrive at maturity indicates poverty or ignorance. The urban death rate in Europe in the Middle Ages was tremendously high, but during the nineteenth century, as a result of engineering and sanitary progress, it sank nearly to that of the country districts. The race of man, ever since the beginnings of volitional control, has had a smaller death rate relative to the total number of individuals coming into existence than has any other species of living creatures. Even in the most miserable industrial population where one half the children die before they are five years old, the death rate is much less than among the young of the lion or the eagle. The average human death rate became much less in the nineteenth century than it had ever been before. The death rate in the world as a whole in 1911 is estimated to be 28.9 per thousand, which is far greater than that of the more advanced countries. The decrease in a quarter of a century in certain countries is as follows (for comparison with preceding table):

	Death rate		
	1885	*1912*	*Decrease*
Australian Commonwealth	15.7	10.7	5.0
Austria	30.1	20.6	9.5
United Kingdom	19.4	13.8	5.6
France	22.2	17.5	4.7
German Empire	25.3	15.6	9.7
Hungary	33.1	23.3	9.8
Netherlands	21.4	12.3	9.1
Denmark	18.4	13.0	5.4
Norway	17.2	13.4	3.8
Sweden	17.5	14.2	3.3
Italy	27.3	18.3	9.0
Spain	32.6	21.3	11.3

The estimates of world population indicate that the increase of numbers was at the greatest rate in the half century from 1830 to 1880 and that it is now much less. Population increased so rapidly that the limit of resources began to be felt. The pressure of population makes itself felt in various ways, and on various levels of national culture in Japan, India, Germany, the United States, and in almost all other lands.

§ 7. **Population growth and intensive cultivation.** Let us analyze the process of change when population is a dynamic factor. A growth of numbers disturbs an established equilibrium of cultivation on the extensive and intensive margins (see Chapter 12), changes the relation of the value of labor-services to land uses (and to all instrumental uses), and leads to new levels of adjustment. Real changes are, of course, always complex, and along with population-changes go changes in machinery, area, methods, use of fertilizers, etc. Our question is as to the effect of population-change in itself considered, other things being equal, and for simplicity is limited here to the case of staple food crops.

A population on an area varying in fertility would apply its labor to the best tract. This, in an earlier example (Chapter 15) would be A, where, by hypothesis, 10 days' labor produces 24 units. Wages would stand at the level of 2.4 bushels and rents would be nil. When the pressure of popu-

lation requires that B should be cultivated, the wages on A would be 22 bushels and rent about 2 bushels. When cultivation moves to tracts C and D, rent arises successively on B and C. If each tract continued to be cultivated with the same amount of labor as before, the rent on A would be first 2, then 4, then 6 bushels when tract D first came under cultivation; the rent on B would then be 4 bushels, and the rent on C, 2 bushels. (See Figure 59.)

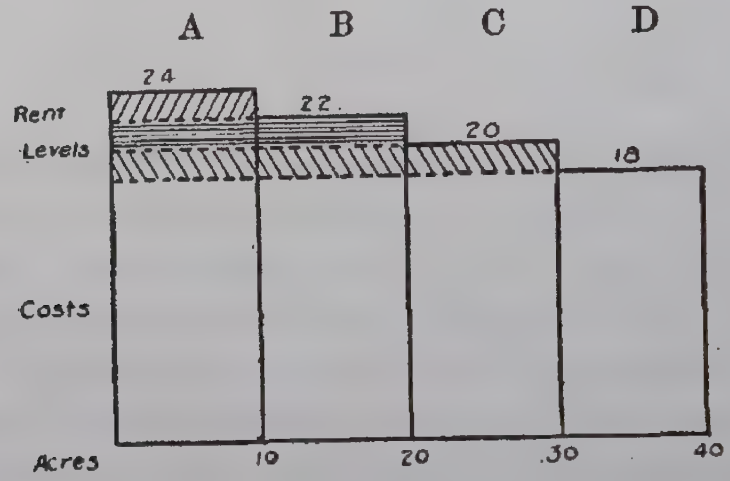


FIG. 59. EXTENSIVE CULTIVATION AND THE RENT LEVELS.

Rents on grades of land with different degrees of extension of cultivation (approximate).

	Tract —			
	A	B	C	D
When A only	0	0	0	0
When B first taken	2	0	0	0
When C first taken	4	2	0	0
When D first taken	6	4	2	0
When D more intensive	6+	4+	2+	0+

But with each extension of the margin of cultivation there should occur increasing intensity of cultivation on the older tracts, so that the return to a unit of labor should be equal in the two uses. When labor will yield but 2.2 bushels on B, it will be applied on A as long as it yields as much as 2.2 bushels (not 2.4 as before). Then this would work out as to rents and wages (in bushels) as shown in the table. (The amount of increase of labor for intenser cultivation is arbitrarily assumed. It would vary in practice but always be more intense as cultivation extended.)

TABLE 1

SUCCESSIVE STATIC EQUILIBRIA ON TRACT A, WITH A SLOW RATE OF GROWTH OF INTENSITY OF CULTIVATION

	Units of labor on the best land	Cost of labor per unit	Cost of labor per acre	Bushels raised per acre	Rent per acre
When first grade of land first used.	10	2.4	24.	24.	0
When second grade of land first used	11	2.2	24.2	26.3	2.1
When third grade of land first used.	12	2.0	24.	28.4	4.4
When fourth grade of land first used	13	1.8	23.4	30.3	6.9

So far as the rent results from differences in fertility, it depends on the maintenance of the fertility. If the fertile qualities of the better fields are not restored and maintained, the yield on the once better land would fall at the same time that cultivation extended to the poorer land. Rent may, however, in some cases result from mere advantage of location as population extends.

When a change in the relative quantity of land (or other agents) occurs that imputes to labor less bountiful results, it is a case of decreasing returns; a change in the opposite direction (through discovery, opening of new lands, increase of agents, etc.) is a case of increasing returns.

§ 8. **Law of increasing and decreasing returns.** The law of increasing and decreasing (or diminished) returns may be thus stated. The amount attributable to the labor element of a whole population varies with the amount and efficiency of the material agents at the disposal of labor, increasing if they increase more rapidly than population, and decreasing if the population increases more rapidly than they do. It is one aspect of the law of proportionality as applied, not to a private enterprise, but to the relation of the whole population to its resources. The law of decreasing returns received a name first, and the term has been loosely applied to many very different problems.[8] It was first used in England about 1815 with reference to land in agriculture under steadily increasing intensity of cultivation of the soil year

[8] See note at end of chapter on Various meanings of diminishing returns.

by year in order to get more food per acre. It was called the law of "the decreasing returns of capital and labor as applied to land." The course of events in England called attention to the subject. Population was growing rapidly, and there was need for more food. During much of the time from 1793 to 1815 England was at war, and it was hard to obtain food from abroad. The English farmers, tempted by the higher prices, took poorer lands (marshy, cold clay, infertile) into cultivation and sought to get larger crops from the older fields. This took more labor per acre, and yielded a larger total product, but less per day's labor. Grain and other produce rose in price, land rents and land values increased, wages fell, and therefore the peasant's day of labor bought less food than before. The worst period of all for high wheat prices was from 1800 to 1813; the year of highest recorded annual average price was 1812, $3.80 a bushel. It was a lesson in dynamic economics on a large scale.

§ 9. **Increasing returns in the nineteenth century.** Other forces were at work to create better dynamic conditions in western Europe. The great war ended in 1815 and wheat prices in England fell to a much lower level by 1822.[9] This level was nearly maintained in English markets until 1877. Then again was a great fall to the lowest point in 1894. Returns in agriculture after 1815 were on the whole increasing until 1894. Accordingly, a day's common labor exchanged for more food than before. Population grew, but still improved methods of agriculture produced more with

[9] WHEAT PRICES, ANNUAL AVERAGE IN ENGLAND

Period of		Average price per bushel
Highest prices	14 yrs., 1800–1813	$2.76
Lower prices	8 yrs., 1814–1821	2.25
Still lower prices	56 yrs., 1822–1877	1.65
Rapidly falling prices	6 yrs., 1878–1883	1.33
Lower prices	9 yrs., 1884–1892	.98
Lowest prices	14 yrs., 1893–1906	.82
Rising prices	7 yrs., 1907–1914	(about) 1.00

less labor. Methods of transportation improved and the additional food was imported instead of being produced by very intensive cultivation of the limited area of England. After the forties a great Irish emigration actually reduced year by year the total population of Ireland. Methods of production outside of agriculture were at the same time improving, and real wages almost steadily rose in western Europe throughout the nineteenth century. The great fall in wheat prices as measured in the markets of Liverpool from 1878 to 1894 which bankrupted many farmers and reduced agricultural land values in the eastern United States and in western Europe, brought cheap food to the people. It was a period of increasing returns in agriculture, as an actual historical fact. It is a question whether that period did not come to an end about 1895, the growth of population in the international food markets of Europe and America having overtaken the increase of command over agricultural lands and brought us again into a period of decreasing returns.

§ 10. **Rhythmic changes of population.** Changes in population are constant. Until recently these changes have generally been of a rhythmic nature. Again and again, in the history of savage races, the failure of a single crop, war, or a plague would reduce a population in a few years much below a former level. This loss usually would be recovered within the next one or two generations. An enormous loss of population, however, such as that from the Black Plague in England in the fourteenth century, might rarely cause returns to the laborer to increase so greatly that the effects were not lost for a century. War, invasion, immigration, would reduce or add to the population of each country, yet on the whole the density of population would continue on about the same level from century to century. Good rulers and bad came and went and the education varied above and below a certain average. The amount of rainfall in some localities or in whole countries rises and falls in a pretty regular cycle

of eight to ten years, more or less, causing food supplies to vary, as in the seven fat years and the seven lean years of biblical Egypt. The conditions for special crops, such as frost, snow, sun, cloudiness, hail, vary from year to year; and many insect pests run in cycles alternating with the insects' food supply and parasitic enemies. In a larger view the rise of labor-incomes that resulted from the opening of America and with the agricultural improvement of the last century may prove to be only rhythmic, not cumulative. In so far as a rapid increase of population results, incomes are again lowered toward the former level.

§ 11. **Cumulative dynamic economy.** The growth of population in European and American countries in the past hundred years has gone steadily onward, not canceled by losses. The addition made to numbers (tho not necessarily a further continuation of the growth) is at least for a long period to come, a permanent fact. The movement is doubtless partly, but not wholly, rhythmic, and if a future decrease comes it is likely to result from different causes. This growth of population has gone along with other changes of an equally enduring character. Of this kind is the great increase of area open to settlement by the advanced industrial peoples, the permanent displacement on a whole continent of the savage, hunting economy and its inefficient methods of food production—the improvement of transportation opening up new sources of materials and foods to the older countries, and the rapid consumption of our supplies of timber, coal, and other mineral resources for which substitutes are difficult if not impossible to find.

§ 12. **Individual and general adjustment to static conditions.** In every economic situation there is involved an equilibrium of values and prices. It is the theoretically correct set of prices and incomes—not what we might wish to see but what logically results from the presence of men, desires, and goods as they are. In this equilibrium and in the movements bringing it about, there are two kinds or aspects of adjust-

ment to be observed, the individual adjustment and the general adjustment. Each individual, it may be assumed, moves toward the occupation that (as conditions are, which he can not alter) offers him the best return (theory of wages), and uses his agents (theory of usance) so that they give the best return he knows how to obtain. If no new force is introduced and existing forces are permitted to work themselves out, a static equilibrium will result and will continue unchanged. The principle of proportionality would apply to all the combinations of factors in this equilibrium. At the prevailing prices and with the prevailing methods, so much labor of a certain kind should be used with so many agents of various kinds. If either more or less of any factor is used, the result is a product of less value for the costs and hence yielding a smaller profit (theory of profits). If a new method or a new proportion is found to be better, this is a new dynamic element. But if the theoretic, static equilibrium has been attained, there is no chance to increase the yield except when correcting a previous error by which the ideal adjustment was missed. The individual having found what seems the best adjustment has only to hold steadily to it.

Underlying each individual's adjustment is the general adjustment of prices and yields. Under these conditions not only this workman but all like workmen can get such an amount of real wages; not only this bushel of wheat and bale of cotton bring the price, but all other like units do the same; not only this acre of land, but all other like acres of land will have equal values and uses. The individual in making his adjustment is simply trying to get into line with the general situation, to find his true place on the various levels of prices made possible by the totality of conditions.

§ 13. **Adjustment to dynamic forces.** In a dynamic situation the adjustment still has the two aspects. The individual workman, the passive capitalist, and the enterpriser are all endeavoring to attain to an ideal adjustment inherent in the new situation. We have already seen in many connections

and in many examples how profits and losses multiply in dynamic conditions.[9] Every dynamic force in industry unsettles an equilibrium, makes some factor more or less plentiful, technically efficient, and valuable. The new ideal adjustment must be made quickly and correctly. Sometimes using more of a factor than before yields a larger profit, sometimes using less may do so. The general adjustment that goes on in dynamic conditions is most important because it involves not merely the change of this or that personal fortune, but the raising or lowering of the real incomes for whole sections and classes of the population, and therefore alters the general economic welfare.

NOTE

Various meanings of diminishing returns. The chief other meanings given to the phrase law of diminishing returns, which must be deemed to be more or less confused and erroneous, will here be noted.

It is confused with the law of proportionality or with the law of enterpriser's cost, especially as applied to the use of land in agriculture. The fact that a farmer can not *profitably* employ an unlimited amount of labor in any one year on a single acre is said to be due to the law of diminishing returns. A like application of the term is made in explaining the limitation in the use of land for other purposes, residence, etc. (see above, the principle of proportionality, ch. 12). This application is still further extended to the use of all other kinds of agents. Later and exacter criticism (notably Edwin Cannan, in "Production and Distribution," 1894) has discerned that more than one problem is involved (which he called technical and historical diminishing returns). In our view there are at least three distinct problems: (1) technical proportion, the best mechanical or physical combination; (2) profitable proportion, the enterpriser's best combination of factors at existing prices; (3) diminishing returns, the social-economic problem of the relation of population to resources.

The converse phrase, law of increasing returns, is applied to the economy of large production, especially in the common contrast between manufacturing, said to be subject to the law of increasing returns, and farming, said to be subject to decreasing returns. There is error here at every point. The manufacturing enterprise as it grows is assumed to enlarge the area of land, as it is needed (problem of investment in

[9] See ch. 27, sec. 13, note.

large production), whereas the farm is taken as a fixed area (problem of proportionality). This appears to have been first clearly pointed out by J. R. Commons in his "Distribution of Wealth," 1895.

CHAPTER 35

BASIC MATERIAL RESOURCES: THEIR USE, CONSUMPTION, AND CONSERVATION

§ 1. Changes in the land supply. § 2. New land supplies by means of drainage and irrigation. § 3. Abuse of agricultural land. § 4. Means of restoring lost fertility. § 5. Land for products other than food. § 6. Destruction of the natural forests. § 7. Rapid consumption of coal. § 8. Disappearance of mineral stores. § 9. Civilization's consumption of earth's stores. § 10. Land as a site for residence, commerce, and manufacture. § 11. Production of usable land surface in cities. § 12. Durative character of hydraulic power sites. § 13. Goods varying in increasableness.

§ 1. **Changes in the land supply.** The greatest dynamic movements in industry of modern times have been caused by rapid changes in "the land supply," that great complex of area, fertile soil, timber, mineral resources, etc. This seems paradoxical, for "land," "nature," seems to be the one thing (or great group of things) which is fixed in amount. But the economic supply is that which is available in a market. Land in Venus or Mars is of no economic importance to us, but lands on the earth as yet undiscovered or unavailable are a potential supply that, under certain conditions of price and of technic, may be realized.

The discovery of new trade-routes and of new continents in the fifteenth century had immediate economic effects upon Europe, but these began to be more largely felt as actual settlement on these sparsely settled lands progressed in the seventeenth and eighteenth centuries. Pioneers from the most advanced peoples in the world moved on to take up these areas occupied only by small hunting tribes, and to use them by modern agricultural methods. They overcame the first great

difficulty of distance, dread, and mystery; they faced and overcame the danger from savages and wild beasts; they cleared the forest, opened paths and highways, and enlarged the supplies of new and fertile lands. They made these lands available to help supply many of the needs of the older countries, just as if the areas of Europe had been increased.

The greatest change came in the middle of the nineteenth century with the use of steamships and the rapid building of railroads in the western states of America. This had an effect upon England and western Europe identical in nature with that which would have been produced had an area touching Europe risen out of the ocean. Every country in Europe has repeatedly felt the shock of these great economic changes which have lowered the price of nearly all kinds of their landed wealth. Because of increasing population (about 1860–1890) the need of land-uses was increasing very rapidly, but the supply of land-uses increased so much more rapidly that it caused the lowering of the value of the older lands in the eastern states of America and throughout Europe, the entire abandonment of some lands for agricultural purposes, and the neglect to repair and maintain a large part of the remainder.

The rate of this movement was more rapid in the nineteenth century than it ever had been, and perhaps more rapid than it will be again; but in some measure such developments will continue for a long period. The land in America for centuries was not, but now has become, for some purposes, a part of the supply in the same market as the land of England. The land in Greenland is not, and probably never can be, an important part of the supply of land in the world; but the tropical lands will doubtless contribute increasingly to the supplies of food and materials used in the temperate zones.

§ 2. **New land supplies by means of drainage and irrigation.** The habitable globe has now been fully explored and there are no more agricultural lands to discover. There are,

however, great areas almost unusable in their natural states that can be made to blossom if properly improved. The greatest possibilities of this kind are in drainage and in irrigation. The improvements consist in insuring just that amount of water needed for cultivated crops.

Large areas of damp lands, or those covered with swamps, lakes, or shallow arms of the sea, may be made usable if the surplus water can be removed. In England in the eighteenth century the drainage of the fens in the eastern counties marked a new era in agricultural progress. It is estimated that 16,000,000 acres have been reclaimed in the United States, principally in the states of the Mississippi Valley, and most of the soil thus made available to the plow is of unsurpassed fertility. The areas of fens, swamps, and marshlands still remaining to be drained comprise about 75,000,000 acres, being about 4 per cent of the area of the country. This would add nearly one fifth to the improved farm area (in 1908).[1] Tile underdraining of wet lands is a very enduring sort of improvement which is being made on many thousands of acres yearly. The most extensive work of drainage in the world is that of Holland, where a large part of the surface has been won from the sea. A striking feature of this case is that there is the unceasing need of lifting to the level of the ocean by means of windmills and pumps the natural run-off of rain. Among the larger drainage undertakings in Holland was the draining of the Haarlem Lake in 1840–58, by which 40,000 acres of rich land were made available, and the more recent draining of Zuyder Zee, which added 1,300,000 acres.

Irrigation seeks to supply water to the thirsty land. It is probable that no modern irrigation work (unless it be that of

[1] National Conservation Commission Report, 1908–09, Doc. Cons. No. 5399, p. 373. Of the 75,000,000 acres about two thirds are in the southern states, Florida having about 18,000,000, Louisiana 10,000,000 and other states, Mississippi, Arkansas, Georgia, North Carolina, South Carolina and Texas, ranging from 6,000,000 down to 1,600,000 acres. Over two thirds of the rest is in the group of contiguous states, Indiana, Michigan, Wisconsin, Minnesota, Illinois, Missouri.

the recent Assouan Dam in Egypt) equals that which once was done on the now desert lands between the Euphrates and the Tigris. The opportunities for irrigation, however, in America with its great central desert west of the one hundredth degree of longitude, are enormous. Already large works have been built by the government and by private enterprise, irrigating 13,000,000 acres, but the national and state governments and private enterprise are entering upon the task on a scale never before attempted. It is estimated that the total area that may some time economically be irrigated is about 45,000,000 acres, enough for nearly a million fifty-acre farms.[2]

§ 3. **Abuse of agricultural land.** The forces acting upon the land supply do not all work in the same direction. The land supply shrinks on some sides while it grows in others. The effects of bad husbandry are everywhere in the world apparent, and in many regions fertile fields have been physically and economically destroyed. In Asia, lands that once supported millions of people, perhaps tens of millions, are now deserts. Egypt, for a time reduced to a semi-desert condition, has only in the past century been restored to a certain extent by the use of new methods and a return to the old ones. Many of the areas that were the granaries of Rome can now hardly support a sparse, half-starving population. The land surface remains, but some of the elements indispensable to its value have been destroyed.

Even in young America may be seen the effect of a failure to keep land in repair. As the new rich lands of the West were opened up, the old lands in the East were allowed to wear out, and many of them were abandoned. Increasing returns marked the spread of the frontier westward. On the new lands in turn the same methods were followed, using up the first rich store of fertility with no attempt to keep up the quality of the soil. This may have been the best policy for

[2] Report of National Conservation Commission (1909). Pub. Doc. Consecutive No. 5398, p. 67. Figures for 1908.

the time; it would not have been economical to employ Old World methods of intensive husbandry when such rich extensive areas were being opened up. The resulting harvests were in many places phenomenal; in the valley of the James River in Dakota twenty crops of wheat were taken from the same lands with no apparent decrease, and in the black bottom lands of Indiana and Illinois, sometimes overflooded, enormous crops of corn have been raised still longer without fertilizer. But the process was one destructive in most places of the natural resources. As settlement moved westward, great forests fell in ashes, and the soil was robbed of the fertile elements which it had taken centuries for nature to store up. What was happening in America and in other new lands in the nineteenth century was the primitive method of exploitation of arable lands (*Raubbau,* robbery-tillage, as it is expressively called in German). In 1908 there were nearly 11,000,000 acres of abandoned farm lands in the United States and about 4,000,000 acres had suffered from soil erosion as the result of neglect.[3]

§ 4. **Means of restoring lost fertility.** In the older parts of the United States, as in the older countries, methods have long been employed to maintain the fertility of the soil by returning or increasing certain of the fertile elements. When by neglect of fields the underlying rocks have become denuded of their covering of organic materials, the process of restoration is most difficult, slow, and costly. The mountain sides have been stripped of forests, and the fertile soil has been washed into the river valleys in many of the older countries as in Greece and Italy, and in many parts of eastern and southern United States. Except in such cases, the soil is a self-replenishing agent, and if allowed to lie fallow, will *slowly* recover its fertility in whole or in part by disintegration of the subsoil, by slow wearing away of the infertile surface, and by plant action. But self-replenishing of soil is slow. It takes Nature about 500 years to create one inch of fertile

[3] Report of the Conservation Commission, vol. 1, p. 78.

top-soil. When the use of the land is needed, Nature's way is costly, for it costs time.

Other ways are quicker. Stable manures and garbage can be hauled from near-by towns; seaweed and mineral fertilizers, such as phosphates and lime, can be bought and applied. Subsoil plowing is practised to make available new layers of soil that are just as important as new acres added to the surface. Leguminous crops like peas and clover, which have the power of extracting nitrogen from the air, are cultivated, and either plowed under or fed to animals in the fields. If the roots of such plants are inoculated with bacteria their nitrogen-making power is greatly increased. The progress of science and of skill in agriculture is going far to maintain present food areas on the average in undiminished efficiency. In many respects the productivity of land may be even further increased. If we did not have to reckon on a great increase of population in the world, the problem of a continuing supply of land to grow food would be a relatively minor one.

§ 5. **Land for products other than food.** The problem of the supply of agricultural land is first, and most often, thought of in connection with the supply of staples like corn and wheat used for food. But it relates also to the supply of all other organic materials that have to be constantly produced, such as teas, coffee, spices, fruits, sugar, etc.; meats, fats, hides, bones, feathers, bristles, etc., from cattle, swine, sheep, or poultry; materials for textiles, as flax, linen, cotton, including those that must be obtained by the use of animals, as is the case with silk and wool; vegetable oils, as cottonseed, linseed, olive, and turpentine; animal oils, as lard, tallow; and thousands of other materials. Each of these kinds of goods has its own peculiar need of area and fertility, and its peculiar influences on the maintenance or exhaustion of the soil. Each must be separately studied, and thus has developed in each natural science its economic department—economic geology, industrial chemistry, economic botany, economic zoölogy and

its more special branches, called economic entomology, economic ornithology, etc. In the case of many organic products the amount available promises to continue adequate for the needs of the future; in the case of others, scarcity makes itself much more quickly felt.

§ 6. **Destruction of the natural forests.** The forests have been used with less regard for future uses than have agricultural lands. Moreover, a conservative policy with regard to forests has been more tardily adopted, because the necessity of it was more tardily brought home to men. To the barbarians of Roman times, sparsely peopling the lands, and with few uses for timber, the primeval forests of Europe must have seemed as certainly renewable as the waters of the rivers or as inexhaustible a stock as the sand of the seashore. Left a century untouched by man, any land once naturally covered with trees would revert to a state like that of the primeval forest. Under the economic conditions of barbaric times the forests were self-replenishing sources of supply. They ceased to be so, in full measure, as population increased. The consequent curtailment of the rights of peasants to the free use of wood began to cause social and political troubles early in the Middle Ages. Until the eighteenth century scarcely any systematic beginning was made in the cultivation of the forest growth. Until a few generations ago in European countries, and until the present moment in most parts of America, timber has been cut with no attempt to maintain an undiminished stock.

Germany and France began in the eighteenth century to turn attention to systematic forest culture, but England, with exceptional transportation, could more cheaply get timber from Norway and from North America. The magnificent forests of America were a source of ready income to the settlers, affording immediately saleable exportable goods in the form of ship timber, masts, shingles, staves, pitch, and turpentine. A bountiful supply of lumber has always been a large element in the prosperity of the American people.

From the first settlement to the present, the use of the forests for lumber has speedily grown. To the settlers much of the forest was, however, a real hindrance to agriculture. While great quantities of wood were used, still greater quantities were wasted, trees being girdled, the ground burned over, the timber destroyed in any way that would clear the soil—timber which to-day would be of far more value than is the cleared land on which it stood. Such methods met the immediate need, but considering present conditions, the labor was worse than thrown away.

Our forests once covered 45 per cent of the land area of the United States and even now they cover 25 per cent. The yearly growth of 12 cubic feet per acre equals less than one third of the annual consumption (40 cubic feet). "We take 260 cubic feet per capita, while Germany uses 37 cubic feet, and France 25 cubic feet."

The supplies of lumber must be sought on the very margins of our territory: Florida, Maine, northern Michigan and Wisconsin, Washington, and Oregon, some of which supplies are so distant from the densely populated states as to be almost unavailable on account of the cost of transportation. Professor Marsh, as long ago as 1864, characterized the policy that had been thus far pursued: "We are breaking up the foundation timbers and the wainscoting of the house in which we live in order to boil our mess of pottage."

The indirect effects of these changes are fully as great as the direct ones. Forests greatly affect climate, temperature, and soil; they influence the humidity. They equalize the flow of streams, moderate the floods, and by preventing the washing down of the rich soil, keep the mountain sides from becoming bare and sterile rocks. So, near the end of the nineteenth century, the people in America began most tardily to think of forestry. Of our forests remaining, one fifth are still in public, and four fifths are in private ownership. The purpose of scientific forestry is to make forest lands permanent use-bearers, durative agents, to make them yield

not a single crop of timber, but an unending series of crops.

§ 7. **Rapid consumption of coal.** With care, the use of agricultural and of forest lands may be durative; but the extraction of coal is a purely consumptive use of the mine. Every ton used to-day is subtracted from the supplies for future generations. The coal deposits in the earth have only recently been drawn upon. A modern town with a few thousand inhabitants probably uses to-day a greater quantity of coal than was used in all Europe two centuries ago. The large deposits of coal in England and their early development long gave to English industry a great advantage over other countries. In England, however, has first been felt the fear of the exhaustion of the coal supply. Professor Jevons, in 1865, sounded the note of alarm; he prophesied that because the coal deposits in America were many times as great as those of England, industrial supremacy must inevitably pass to America. Already the supremacy in coal and iron production has passed to America, and that in many other industries where fuel is an important element in cost soon will come. In England the accessible supply of coal is limited, deeper shafts must be sunk, and tunnels extended far under the ocean bed, and the coal got with greater difficulty and at greater expense. Coal has risen in price in England within the last few years, and will continue to rise in the future. The coal deposits of America have been estimated to be thirty-seven times as great as those of England, but many of the best American mines show signs of diminution. The best anthracite beds will be gone in less than three quarters of a century. And yet there is in America little thought of the future in this regard.

§ 8. **Disappearance of mineral stores.** There are many other natural materials which, now that the exploration of the earth's surface is pretty well completed, appear to form a limited and unincreasable stock. Their gradual consumption is making and will make great changes in the economic

world. Natural gas is a wonderful substitute for coal, and when first found in a locality it brings a brief prosperity, but it is soon exhausted. Petroleum, little used before 1865, will help light the world for but a few decades, for it is drawn from natural reservoirs slowly, if at all, replenishing. The recent increase in the use of gasoline for motor-vehicles has directed thought to the limits of possible supply. Iron ore, the most essential single mineral resource, has been taken from the earth in greater quantities within the last fifty years than altogether before in the history of the globe, and the limits of rich accessible supplies in the United States are already in sight. China may be the next great center of iron and steel production. Copper, tin, lead, gold, silver, and potter's clay are a limited stock, inadequate to increasing needs. When any deposit has been worked out, the abandoned quarry, mine, or claybank is most often useless for any other purpose.

Some of these materials are made available more than once through the useful services of the junk man. New processes are devised for extracting metals from lower grade ores which before were worthless. Sometimes a good substitute is found, such as aluminum, which gives many of the same uses as iron and copper and which can be extracted from clay by the use of electricity generated by a waterfall. This would promise an almost inexhaustible quantity, but as yet obtainable only at high cost. Many other substitutes will doubtless be discovered, but the outlook in some directions has little promise.

§ 9. **Civilization's consumption of the earth's stores.** There is a striking contrast between the modes in which the earth's surface is utilized by modern man and by his ancestors. The savage uses the fruits that he finds, and those fruits are, almost without exception, renewed the next year. The earlier civilizations did not go deep enough into natural resources to use up permanently the world in which they lived. The only mines that were worked out under the great ancient empires were gold and silver mines, while the mines

of heavier, useful metals were touched but lightly. But from the eighteenth century the earth's crust has been exploited at an ever-accelerating rate. Scientific knowledge and mechanical improvement have combined to unlock the storehouses of the Geologic Ages. If this movement continues, many important materials must be exhausted in the not far distant future.

§ 10. **Land as a site for residence, commerce, and manufactures.** Probably the most durative of all economic agents is solid land-surface used solely for standing room. Yet geology reveals that every part of the earth's crust has been under the ocean, some of it many times. Every part of the world's surface is more or less rising or falling, changes within historic times having been enough to depress and again elevate large stretches of sea coast. Slight earthquake shocks are felt in nearly every part of the habitable globe. Before the end of man's tenancy on the globe great changes will take place in the land surface. Not only San Francisco, but New York, may some day sink into the sea, beneath which may now lie the building sites of the future metropolis. But these catastrophic changes are rare, and the slow secular changes hardly enter into the calculations of men. "The solid earth" is the synonym of the everlasting and unchangeable. Building sites for residence and business purposes—factories, offices, stores—are the purest type of durative agents known to us, despite the occurrence of volcanic eruption, and of earthquakes in limited districts, and of intruding waters and crumbling walls almost everywhere.

The covering of the ground with dwellings does something to protect it from the natural wear of rain and winds, as do also the erection of stone and cement walks, the planting of trees, the diversion of streams, and many other safeguards. The space needed for existence is small. With a density of population equal to that of the most crowded districts in the East Side in New York, all the people of the world could be housed in the State of Delaware. The problem of residence

land is to get ample space for health and a happy life conveniently near to places of work, where man can earn a livelihood. The scarcity appears in very high rents for the miserable tenements of the poor, and in fabulous prices for residence sites in the fashionable neighborhoods.

Sites for manufacturing, commerce, banking, and trade that are conveniently located in relation to workers, to consumers, and to transportation facilities for raw materials and finished products, are few in any community. Their uses are highly valued. Rapid transit by producing a larger supply of accessible sites does something to relieve the pressure for limited residence land, but it makes possible still greater pressure for the central business locations.

§ 11. **Production of usable land surface in cities.** The work of man is doing much by form changes to increase the area suitable for residence and business. Large districts on the river fronts of New York are filled land. The larger part of the most valuable lands within the city of Boston were once tidewater swamps, which have been filled and made usable by great outlays. Great hills have been dumped into the Bay of San Francisco to convert mud flats into solid earth, for railroad terminals and warehouses. In almost every city much has been done to level hillsides, to fill valleys, or to drain swamps. Along many picturesque lakes the steep banks for miles are dug with pick and shovel or blasted with dynamite, and dumped over into the water to make level sites for cottages. Wooden, stone, or cement retaining walls are built so that the debris from the streams and the sands washed up by waves may be retained to widen the solid land. Suitable places for docks, warehouses, and factories, and other needs of commerce and industry, are created on the shores of navigable waters. The engineer in tunneling mountains and building roadbeds over marshes or along swampy riversides, or in digging canals between rivers or between oceans, is making the kind of land surface suitable to the uses of transportation and trade. It is characteristic of nearly all these

artificially altered spaces that they are as solid and enduring as natural formations of level land, and are subject only to the slow action of rain, streams, waves, winds, or to rare upheavals of nature. Man's works are in these cases as enduring as nature's.

§ 12. **Durative character of hydraulic power sites.** The sources from which man has as yet successfully obtained power are domestic animals, winds, falling waters, the tides, and heat producing materials (wood, coal, oil, etc.). The winds, while inexhaustible sources, are too irregular to be of the greatest importance. Waterfalls are of increasing use with the progress in the art of transmitting power in the form of electricity. The maintenance of water-power plants in efficient condition calls for much labor on the banks of the millstream, or for the building and repairing of dams and reservoirs, of pipes and of water wheels. With this care, waterfalls are durative in a high degree. The supply of power from water is capable of enormous increase through the construction of reservoirs, the building of canals, and the economizing of great sources now going to waste. The waterfall as a whole is permanent, perennially renewed by rains; but the energy liberated by the falling water is consumed each moment. Because of this natural renewal of the power, a continuing usufructuary value adheres in the site of land whose possession gives control over the falling water. A similar view is to be taken of the rare sites where tidal power can be economically employed.

§ 13. **Goods varying in increasableness.** It has long been customary for economists to talk of economic goods that could be increased indefinitely (meaning infinitely or, in any event, without any limit ever appreciable to man) without any increase in the cost or scarcity. This class of goods was considered to be very large. There is no such class of economic goods; it is impossible that there should be; if they are "scarce," increasing demand must make them scarcer, except as discoveries and improvements increase the supply. All

kinds of wealth are, so far as it is economical to do so, thus increased, even land surface. Many kinds in the course of time are very greatly increased with little or no direct effort, but the supply of all alike can be secured in larger amount at any given moment with the known methods and tools only with increasing difficulty. The different forms of wealth may be ranged on a scale according to the ease with which they can be increased by effort. They may, therefore, be classed as relatively fixed and relatively increasable. Some natural resources belong at one end, and some at the other end of this scale, and, necessarily, the tools and appliances made from these materials must likewise range between the extremes. Except as form and place changes are thus limited by elemental materials and natural sources of power, the outlook is that form and place change will grow constantly more easy, and elementary materials constantly more difficult, to obtain. No hard and fast line divides the different kinds of goods, but the difference in degree of increasableness is a fact of great social importance, affecting the direction in which industry can and must progress.

The difference in increasableness of the various forms of wealth is of importance in considering various social questions, such as the effects of an increase of population, and the kinds of taxation most equitable and most favorable to the progress of society. Account must be taken of the fact, for instance, that the number of bricks can be increased more easily than the amount of land; but there must not be overlooked the possibility of increase in any of these forms of wealth, nor the limits to the increase of any one of them.

CHAPTER 36

MACHINERY AND WAGES

§ 1. Progressive control over natural conditions. § 2. Labor-saving invention as a dynamic factor. § 3. The lump of labor notion. § 4. Evils of "the industrial revolution." § 5. Some evils of the introduction of machinery. § 6. Loss to the less efficient workers. § 7. Effect of machinery in different industries. § 8. Beneficial effect of machinery upon wages. § 9. Dependence on abstinence. § 10. Grades of labor and gains from machinery. § 11. Opposing tendencies.

§ 1. **Progressive control over natural conditions.** Various stages of progress in human history have been recognized. First is the stage of appropriation—the stage of hunting, or of fishing, or of gathering the spontaneous fruits of the fields. Man in this stage is little beyond the animal in his economic methods; he uses some tools to gather what nature chances to bring forth, but he does not guide and direct the natural processes. The limitation to man's powers in this stage are marked. There is excess of supply and waste at one season, scarcity and great suffering at another. With such crude utilization of the bounties of nature, a vast area will support but a small population. When sheep and cattle have been domesticated and where there is a large area for grazing, industry rises to the pastoral stage. While still dependent on nature's bounties for the feeding of his cattle, man is hourly intervening to protect, increase, regulate, and improve the flocks and herds on which depends his supply of food and materials. Famines are more rare, economic welfare is greater, a larger population is nourished on the same area. The agricultural stage begins whenever man tills the soil, plants seeds, and increases by his care the supply of vegetable food. This is a still greater intervention in the course

of nature. Man anticipates the future, directs forces, and groups materials to his purpose of getting a regular food-supply. He is thus forced into settled life, at the same time improves in hand-production of commodities, and makes further steps in commerce. Then gradually comes the industrial stage, in which control over nature grows, supplies increase, machinery and motive forces are utilized, and humanity is in the full tide of industrial development. Thus throughout history the economic progress of society has been marked by decreasing dependence on the bounties and chances of nature and by increasing shaping of materials and control of natural forces by man. There are no sharply marked changes, but there is a growth of security, of certainty, and of productivity. With man's increasing power and foresight, the element of chance is reduced.

§ 2. **Labor-saving inventions as a dynamic factor.** For several centuries, accompanying the advance of the natural sciences, there has been a gradual improvement of mechanical appliances in the practical arts in western Europe and America. The question may be put as regards the simplest improvement of the simplest tools: how do they affect the wages of the workers? The question took a dramatic form when power-using machines were so rapidly introduced in the last half of the eighteenth century in England.

It is by the use of power that the greatest saving of labor can be effected. Machinery is applicable in very different degrees in different processes and industries. In many industries and parts of industries, machines are usable only in a slight measure, indirectly, or not at all. They are of the least assistance in the personal services, and in the immediate work of the thinker, the teacher, the speaker, and the artist. Agriculture presents conditions of difficulty for the use, in the fields, of power other than that of man and of draft animals. Even horse-drawn gang-plows, planters, seeders, mowers, reapers, harvesters, hay-loaders, etc., to be used profitably require a level surface and a pretty large area given to

a single crop. Such farm machinery can not be used as well east of the Alleghany Mountains as in the Mississippi Valley, and it is still uneconomical in large portions of the civilized world. The use of traction engines for plowing is increasing slowly. Other machines that can be used at the barn, and can be moved from one farm to another, have a constantly widening use, as threshers, automatic unloading-forks, corn-shellers, feed-cutters, hay-balers, steam and gasoline engines for pumping, wood-sawing, etc. With the aid of these machines the labor required to produce the staple food for one hundred people is a fraction of what it was a hundred years ago.

The use of machinery in land and water transportation (steamships, locomotives, electric power), has affected all other kinds of industries, by changing their locations, increasing the supplies of materials, and widening the markets. Yet the most typical applications of machinery have been in manufacturing, in making form-changes, in the mass-production of standardized products. (See Chapter 31 on large production.) The most striking changes took place in the textile industries. In 1840 a man's work in spinning cotton was 320 times as effective as in 1769, in 1855 it was 700 times. Similar examples are found in the manufacture of shoes, and in all varieties of wood- and iron-work.

§ 3. **The lump of labor notion.** Of the countless inventions many do not "save labor," but merely add to the comfort of the user, or to the ease of the worker; others enable men to do new things before quite beyond the power of any man or group of men; but many are "labor saving," in the sense that they enable the same labor to get a larger result in the same time, or the same result in less time.

The popular judgment always has been that this reduces the "amount of work" to be done, meaning the opportunities for employment, the number of jobs to be had by workers. The "lump of labor" notion, as it is called, is widely held, especially among workingmen. The notion is that there is

exactly so much labor predetermined to be done; therefore, if machines are introduced, there is that much less for men to do. The conclusion easily drawn is that labor-saving machines are the explanation of any existing unemployment; and that they make wages low. Yet few if any would be rash enough to say that the income of the masses would be higher to-day if all tools and machines were abandoned and men worked barehanded. It is recognized that such a course would reduce all alike to want; indeed, that without the aid of labor-saving appliances the present population would be utterly unable to support existence. The objection is rather vaguely felt to the use of *too much* machinery, and to that kind which has been recently introduced, and to that kind which is used in the objector's own trade. The experience in the rapid introduction of machines in England in the period called "the industrial revolution" (about 1775 to 1825), as well as the experience of workers when a rapid change is made in their own trades, gives an appearance of truth to this view.

§ 4. **Evils of "the industrial revolution."** It chanced that the extensive introduction of machinery in England, particularly in textile-manufacture, was coincident with the unhappy result of a lengthening of the hours of labor in factories and a lowering of wages. These were, in fact, quite abnormal consequences and have not been seen elsewhere, altho the owners of factories wish to keep their machines employed as many hours as possible. The laboring classes of England were at that time demoralized and depressed by industrial and social influences that had no logical connection with machinery: the very rapid growth of population, due in part to the evil workings of the system of poor relief, excessive taxation to carry on wars, the abnormally rapid growth of cities. In all other countries of Europe and in America, where the introduction of machinery has been more gradual, it has been followed by a shortening of working hours (as eventually it was in England also) and by a rise of wages. Indeed, the experience of England served as a

warning to other nations, and by labor organization and factory-regulation much was done to reduce the shock of rapid introduction of machines.

§ 5. **Some evils of the introduction of machinery.** Not infrequently it has happened that employers have introduced labor-saving machines at the time of a strike, so that they could turn out the former amount of product with fewer men. The strike gave just the motive needed to overcome the inertia of changing to a more expensive process, one perhaps still of somewhat uncertain advantage. Small wonder that the striking workmen should view the machine as a strike breaker, for literally at the moment it was taking "their job" away from them.

In more normal conditions, when there is no strike, it often may happen that the immediate effect of improved machinery, if suddenly introduced, is to throw some men out of employment. Any sudden change in industry injures men that have become adapted to the work that is affected. This is as true of change brought about by the opening of new trade routes or by scientific discoveries (where machinery does not enter in) as in the case of labor-saving machines. If machines displace labor rapidly, men that can not adjust themselves to the new conditions suffer, and there are always some that can not adjust themselves, always some that suffer. A well-mastered trade, a wage-earning tho intangible possession, may be made suddenly valueless. Men can not quickly change their methods of working or their place of work. It is rarely possible for a man past middle life to shift over into a new trade where his efficiency will be as great and his pay as high as in the old.[1] New methods of puddling iron sent many old men into the poorhouses of Pennsylvania between 1890 and 1900. Even where the total employment increases, the individual sometimes suffers. The increased demand resulting from the cheapening of a product

[1] See chs. 18 and 19

may call for more workers than were employed before the new machinery came in, but men needing a different training, and some of the former workmen may be thrown out of employment. The introduction of the linotype and monotype is said to have displaced a large number of hand type-setters, but to have increased the amount of printing. As the machines are expensive and can not be worked properly by men not highly expert, men past thirty-five years of age have not been allowed to learn their use.[2]

§ 6. **Loss to the less efficient workers.** The least efficient men in any trade suffer most from the introduction of machinery. The new method crowds hardest the man at the margin of employment. The more skilled workman can, at his more rapid pace, still earn a living wage in competition with a machine, or can move into some other occupation. It often happens that they are advanced to be foremen or managers, and gain greatly by the change. The less skilled, unable to adapt themselves, can but drop out entirely, innocent victims of an economic change, sacrifices to the cause of in-

[2] These sudden changes in machinery also cause losses in many cases to the owners of the existing equipment. Every considerable improvement brings unfortunate results to some while it means gains to others. At every moment in a progressive society, some agents are being thrown out of use by improvements in tools and machinery. The machinery in flour-mills has been almost completely changed, parts of it repeatedly, while steam rollers have been substituted for the old millstones and many old mills have been abandoned. A change in the process of making paper threw out of use much machinery that was only in part saved by its removal and adaptation to the making of coarser grades of paper. Many minor inventions in the iron industry, still more the invention of the Bessemer process, threw out of use great numbers of the old appliances. Such illustrations can be indefinitely multiplied.

Similarly changes in the sources of power are shifting the location of many industries and causing the rise of some and the fall of other valuable agents. Water-power, because of its uncertainty, has been replaced in many places by steam-power, and in many places steam-power in turn has been rivaled by water-power since the improvements in the generation and transmission of electricity.

dustrial progress. Happily such pathetic incidents are relatively not numerous. Most machinery is introduced in commercial centers when demand for the products is increasing, and there is no need to discharge men; it gradually spreads to other factories in such a way that most men can adapt themselves to the change.

Since recorded history began there have been recurring periods of unemployment. Greece and Rome often had the problem. But it is helpful in getting some perspective in judging the effects of machinery, to note that in proportion to the number of the population the unemployed were probably more numerous in the reign of Queen Elizabeth than they are to-day, and the general level of income was much lower.

§ 7. **Effect of machinery in different industries.** Every new machine or process compels some readjustment of employment, the number in some industries increasing, in others diminishing. If extreme examples are taken, it may be made to appear either that an increase or that a decrease of employment results from machinery. Labor-saving machines may be roughly divided into three classes: those that create more employment in the particular industry than they take away; those that leave employment unchanged; those that reduce the amount of employment. To allow for changes in population these classes may be expressed as percentages of the whole population, (1) those labor-saving machines that call for a larger percentage of workers than before in the particular industry, (2) the same percentage, (3) a smaller percentage. The superficial appearance of "saving of labor" is greater than the reality in every industry where the new machines are more elaborate and costly than the former tools or machines. Labor is required to get out the material for the new machines, to make, repair and maintain them, and to supply them with power. But of course they would not be "labor-saving" if the labor thus required in new ways were equal to that released by the new process.

The chief changes of employment result from the shift of

demand for products. The demand for different products is more or less elastic. Industries grade off from those that are capable of developing a great demand for labor to those at the other extreme that are capable of a very slight increase, as a result of a lowering of the price. There is hardly any assignable limit to the consumption of textiles, provided their price falls; the demand for dress alone is indefinitely expansible. Queen Elizabeth, who had a different dress for every day in the year, has many potential imitators. It is a striking fact, in view of the prominent part labor-saving machines had in the textile industries, that there were more handlooms in use in England in 1850 than fifty years before, tho in the meantime power-looms had displaced the handlooms in all the great factories. There was still room for variety of patterns and processes. There is a constant increase relatively, as well as absolutely, in the number employed in transportation, as each census shows; there are more railroad employees relative to the population than there were stage-drivers and teamsters before the day of railroads. The proportion of people now engaged in printing books and papers is larger by far than in the days when all the books of the world were written by the old monks in their cloisters. The proportion of workers in agriculture, on the other hand, is less than it formerly was. In part this is a change in appearance only, for the farmer once made a large part of his tools which are now made by workers employed in manufactures, yet who in a very real way are aiding in agriculture. In part the change is, however, the effect of the use of machinery and other improvements in agricultural processes. The amount of raw-food products required for each hundred persons is quite inelastic. As it becomes possible to expend more for food, the change is made in quality and in variety rather than in quantity. The greater part of the saving in the cost of food is, however, expended in other products, and the labor saved in agriculture finds employment in supplying new desires. In other cases, also, new industries are made possible as machines

liberate energy from the production of the more necessary goods. At each census it is necessary to change the schedule of occupations, because men have adopted callings unknown before. The desires of men are variable and indefinitely expansible, and as the products of machines increase and the prices fall, income is expended in other directions. Between 1890 and 1910 the proportion of the population engaged in art, music, travel, social festivities, etc., in America has increased as is indicated in the following:

Population	46 per cent	
Printers and lithographers.	68 per cent	(While the linotype, revolving presses, etc., were increasing.)
Teachers	80 per cent	
Journalists, scientists	124 per cent	
Actors	150 per cent	(While the "movies" increased more rapidly.)
Employees of railroads	158 per cent	(While great improvements were made in locomotives, etc.)

§ 8. **Beneficial effect of machinery upon wages.** Now let us look at the fundamental theory in the problem. The introduction of machinery has taken place along with changes in other dynamic forces, some of them doubtless in themselves "tending" to raise, others to lower, the level of real wages. Our question may take this form: What is the effect, given a stationary population, on a fixed area, with other resources unchanged? To an unchanging population come better, more efficient machines. It is as if the land became richer, the materials easier to get, the workers stronger and swifter. It is a richer economic environment. The owners of machines, competing for the sale of machine uses, have more to offer to each laborer. It is the converse of the decreasing returns when population grows and decreasing returns result; here the material equipment grows and increasing returns result. The application of labor stops at the higher uses or services of agents and is not forced to the lower. The more perfect the economic environment, the higher the incomes even of

those who own no part of the machinery. A part of this benefit may appear in the form of higher money wages received, a part in the form of the lower prices of things bought. Real wages are the essential thing. As a consumer the laborer shares with every other member of society in the benefits of improved machinery. The benefits resulting from great abundance are diffused, and as goods are brought from the high, or scarcity, end of the scale of value down toward the level of free goods, everybody in the long run gains by the abundance and cheapness.

§ 9. **Dependence on abstinence.** The gain to the general welfare, however, can result only when the new inventions are actually embodied in machines. An invention is only an immaterial idea, and the machines in which inventions are incorporated are wealth which has a capital value. Further, a gain can result only when the usance of the machines is not so high as to absorb the larger part of the gain in efficiency. Not all labor-saving inventions call for more elaborate or more costly machines. Some are merely better methods, and require no more equipment—or even less. Some of them are simpler and less costly than the forms they displace. These (unless patented) are free goods, uplifting the efficiency of production "without money and without price." But some inventions call for a larger and longer investment. Unless the rate of time-preference is low enough the new invention will not be embodied in machines that will displace the old, less-efficient forms. (See Chapter 21.) Labor-saving inventions thus simply enlarge the range of choice of means of production among which enterprisers and investors may choose, within the limits of their rates of time-preference. The gain in product by the new method as compared with the old may be so small that it only suffices to recompense the abstinence required for the larger investment. (The new method will not be used if it produces less than the old for a given outlay.) Thus as machines call for larger and longer investments, unless the gain in productive efficiency is large,

a larger *proportion* of the total product must go to capital, while larger *absolute* amounts go both to labor and to capital. (But see below, on opposing tendencies.)

§ 10. **Grades of labor, and gains from machinery.** The general, or average, gain is not to be judged by comparing the conditions of the lowest grade of labor with those of fifty years ago, for while that grade may have been bettered only a little, it has been possible for large numbers to rise to higher grades because of the use of machinery. The physical tasks are to-day much lighter than ever before, and a larger proportion of society is engaged in industries that require skill and thought rather than physical labor. That portion of the work is being more and more shifted upon machines. A machine is "an iron man," it has been said, and comes into competition with other men to lower their wages by outworking and underbidding them. But this iron man can do only automatic tasks; it is not capable of exercising judgment. Every intelligent laborer who can adjust, adapt, fit himself for more intelligent action, will rise above the machine and profit by its presence. But crude physical labor which can compete only on the plane of automatic machines must find its field of employment more and more hedged in. If, however, even a portion of the workers (or of their children) are able to change to new or to rise to more skilled occupations, they reduce by so much the presence of competition below, and make possible a rise of wages there also. (See the doctrine of non-competing classes.)

§ 11. **Opposing tendencies.** It appears from this survey, that the logical effect of labor-saving machinery is to lift the level of efficiency and productiveness on which labor operates. A richer world relative to population means a higher income to the average man. The benefits are unequally distributed, but nearly all share to some degree.

But it must not be overlooked that certain conditions are assumed and if they are curtailed or absent the general benefits which machinery in itself tends to create may be reduced

and be more unequally distributed. These conditions are:

(a) Competition among the owners of machines. So far as machines favor large industry, and large industry widens the scope of monopoly power (Chapter 31), prices may be raised to the benefit of the monopolist so as to cancel a large part of the general gain.

(b) A population increasing but slowly, so as not to neutralize the gain from machinery. An increase in population driving the cultivation of the soil to lower levels, may increase food prices enough to offset the gain from lower prices in manufacturing and transportation.

(c) Natural resources not decreasing through consumptive use. The waste, destruction, and inevitable using up of basic material resources is a change which, like the preceding, operates to offset the gain from improving machinery.

CHAPTER 37

WASTE AND LUXURY

§ 1. Accidental destruction of wealth. § 2. Intentional destruction of wealth by the owner. § 3. Intentional destruction of others' wealth. § 4. Careless waste. § 5. Waste in public outlay. § 6. The fallacy of waste. § 7. Definitions of luxury. § 8. Luxury to give employment. § 9. The fallacy of luxury. § 10. Sudden changes in standards of luxury. § 11. Happiness and the simple life. § 12. The question of justice. § 13. Animal choice. § 14. Choice by primitive men. § 15. Desires and progress. § 16. Function of moderate discontent. § 17. Luxury as an incentive to progress.

§ 1. **Accidental destruction of wealth.** Before approaching in the next chapter the subject of the dynamic influence of saving and the accumulation of wealth, let us look at the subject in its negative aspects, namely, waste and luxury. By waste is meant the accidental or intentional using and using up of more wealth (and services) than would suffice for the purpose of the use. In waste the potential uses in goods are applied so that they cause less desirable results to the user than they might, or even give no use at all. We are concerned here with the dynamic and social aspect of the case. The question is: What is the dynamic effect of waste as a policy? In which way will it carry the general level of incomes, upward or downward? There is a popular opinion, long held, that waste in itself is a good thing, that it gives employment and benefits the working man.

In a simple society, without exchange, the result of waste is evidently bad for the self-sufficing families. If they destroy their food, they suffer from hunger or gratify appetite less perfectly; if they destroy their clothing, they are cold; if they destroy their house, they have no shelter. Waste makes

their economic environment less fitted for their use. In the conditions of our society, where goods are exchanged, the result appears to be different. The need to replace the lost goods makes a demand for special kinds of labor or goods, and this appears "to create" employment for labor. But if a part of the income of the loser must be diverted from other uses to replace the wealth destroyed, those from whom he would have bought suffer an unexpected falling off of their sales. The thought of an immediate benefit to one obscures the corresponding loss to another. The net result is a loss of wealth and gratification to the community as a whole.

There is a real exception where the accidental destruction removes some social difficulty. Such great fires as those in London in 1665 and in Chicago in 1872 result in wonderful improvement to the city as a whole and eventually even to most of the individual owners. When an old city is built almost entirely of wood, each owner may think it to his interest to keep the old buildings. A great fire sweeps them all away and compels the rebuilding of the city on a new and higher standard. But the usual resultant of accidental destruction is loss to the owner, rarely with benefit on the whole to others. It is a use of wealth without a fulfilling of the purpose of production, the gratifying of desires.

§ 2. **Intentional destruction of wealth by the owner.** Another type of case is the intentional destruction of wealth by the owner, to make trade good. The case in mind is not where the destruction is inevitable without man's action, and he merely tries to minimize it—such a case as the throwing overboard of a part of the cargo when the ship is in danger of sinking, in the hope thereby of saving the rest, or as the blowing up of buildings to prevent the spread of a fire. The case in mind is the deliberate destruction of wealth that might be kept for use. One labor leader, for example, boasted that when he drank pop he always broke the bottle "to make trade good" by helping the glass industry. The refuting of this fallacy is one of the time-honored tasks in political economy.

There is, it is true, an increase in the demand for glass and glassblowers' labor; but at the same time there is a decrease in the demand for other goods and other kinds of labor. The proverb, old in Shakespeare's time, runs, "Nothing can come of nothing." What is spent for one purpose can not be for another; "you can not eat your cake and have it, too." A given income can be spent in one of many ways, but not in all ways or even in two ways at once. It is a question of this *or* that, not this *and* that. At the same moment that the demand for pop-bottles is increased, the demand for other things is decreased. Such a form of benevolence is a futile attempt to provide labor for one man by taking it from another. Moreover, it is an uneconomic, harmful attempt, for the breaking of one bottle to have it replaced by another adds nothing to the sum of enjoyable goods in the world; but the same labor and other agents could and should be used to make some of the many other needed things.

If the advocate of wealth-destruction would be consistent, he should break, not merely the pop-bottle, but the water-pitcher and the table as well; he should make a bonfire at least once daily of his clothing, his house, and its furnishings; he should advise blowing up the steamboat and ripping up the railroad when they have carried a single load of passengers. Thus, when all men were naked and starving, and civilization had sunk to savagery, trade would have been made as "good" as, by the policy of destruction, he could ever hope to make it.

§ 3. **Intentional destruction of others' wealth.** Another type of case is the intentional destruction of wealth owned by other persons to benefit trade in general. The acts referred to are not done with criminal motives, but with a view to the public interest. If one sets fire to the property of another, seeking revenge or plunder, he is guilty of the crime of arson. But what shall be said of volunteer firemen that let an old house burn down to provide labor for carpenters and "to make business good"? The duty of firemen is to put out fires, no

matter what the building is; but they choose sometimes to be ministers to the social interest as they interpret it. The more spent for carpenters' work out of any income, the less can be spent for other objects. It is true, however, that if in a small town the money to rebuild is borrowed from a distant loan or insurance company, there is an increase in employment in that town for one season; and that is as far as most men try to carry their economic analysis.

Servants sometimes excuse the breaking of dishes and furniture on the ground that it makes work, and that the employer can afford it. But income is thus diverted from other expenditure, either for productive use or for direct use. In the light of the theory of wages, it would appear that carelessness reduces the servant's own efficiency, and in the long run the loss, in part at least, comes from the wages of that particular servant. Bastiat's discussion of the broken window-pane is often and deservedly quoted. He contrasted what was seen with what was unseen. What is seen is a certain immediate benefit that the glass-maker and glazier get; what is not seen is that the power to expend an equal amount for other things is thereby lost by the owner of the house.

§ 4. **Careless waste.** The destruction of goods of unnecessarily large value to secure a given result is likewise justified as "making trade good." The blunder that compels the rebuilding of a wall in a rich man's garden is an occasion for congratulation to those who see in it a happy provision of work for the unemployed. It is easy to forget that the proper use of goods is the final step in production. According as goods are well or poorly used, the production—that is, the real income or gratification they afford—is large or small. Differences in skill in the use of wealth are great. A French cook, we are often told, can make a palatable soup from what goes from the average American kitchen into the swill-pail. Waste in the use of goods is more likely to be found in new countries where wealth comes more easily and necessity does not enforce frugality upon the masses of the people.

The praise of careless waste implies the error noted in the preceding propositions. Waste makes work for a certain class, but not *more work* (employment and wages) for labor as a whole. It appears to be good only when the interests of a small class of workers or of tradesmen are looked at for the moment; it is bad in the long run alike for workingmen and for all other classes of society. Far more of wisdom lies in the proverb, "A penny saved is worth two earned." The economic use of wealth as surely adds to wealth (and, ultimately, to the income of society) as any other mode of production.

§ 5. **Waste in public outlay.** Some government expenditures, as for local post-office buildings, and river and harbor improvements, are sometimes favored, not because their immediate purposes are good, but because they "make work" and "distribute money" throughout the country. This apology for public extravagance in all its forms has an incredible hold on the public mind. It seems even easier to rejoice that the big impersonal thing, the government, fails to get its money's worth than that one's neighbor fails to do so. The money for public expenditure comes from taxation, and no matter what the system of taxation, the burden falls upon some one, reducing the incomes at the disposal of the people to expend for objects of their own choice. If the work is not worth doing for itself, the collection of money in small amounts from many tax-payers and its expenditure as a large sum in one locality results in a net loss to society as a whole. Where the result is worth something, but not enough by itself to justify the expenditure, the fallacy of the destruction of wealth is present in a smaller degree. Examples are seen in useless offices, overpaid officials, the extreme use of pensions, and in some public subsidies.

§ 6. **The fallacy of waste.** Let us restate the ideas that have been touched upon. The fallacy of waste is due to a narrow and incomplete view of the effects resulting from a particular use of wealth. In many cases it is possible that

some one person may benefit by another's mishap or folly in the use of wealth. The complex interrelations of men in society make this inevitable. But, to appreciate the dynamic effects of such action upon society in general, one needs but to go back to the essential thought of wealth and its purposes. As the average efficiency and bounty of the world fall, so fall the income and welfare of men. As it rises, the social and economic levels rise also. Economic wealth has potentially two kinds of uses, direct or indirect: to gratify desire —thus fulfilling its destiny—or to be converted into higher and more efficient agents. That the possibilities of the latter are boundless is overlooked in the fallacies here criticized. A bountiful and efficient world would be the result of abstinence and saving; a barren and used-up world, the result of the fallacy of waste.

§ 7. **Definitions of luxury.** Closely related to the problem of waste, but still more difficult, is the problem of luxury. It is not possible to define luxury absolutely; it is a relative term. The conception of luxury, however defined, involves always the thought of great consumption of wealth for unessential pleasures. Those opposed to it condemn it in their definition of it, as, for example: "an excessive consumption of wealth," or "devoting a relatively large amount of wealth to the satisfaction of a relatively superfluous want." Those who take a more moderate and favorable view say: "It is the enjoyment of forms of wealth not obtainable by the mass of men." Luxury is not entirely a matter of riches. Many a person of moderate income has relatively superfluous and expensive tastes. One spends more for music than many a millionaire does; another more for books. The difficulty in the definition as well as in the problem of luxury is that it involves a mixture of economic and of ethical questions.

§ 8. **Luxury to give employment.** Luxury, like waste, is justified by some as giving employment to labor. Typical instances are extravagant dress and elaborate balls where fine and costly flowers, decorations, music, and coaches require

the expenditure of a large amount of money. It is said of the Empress Eugénie, wife of Napoleon III, that, in order to help the glove industry of France, she wore a pair of gloves but once; in order to help other French industries, she purchased many silks and laces. It is a very comfortable doctrine to some people that the oftener they change their dress, the greater benefactors to society they are. From time to time a great society "ball" is given in the metropolis, possibly little more elaborate and expensive than many another ball; but if it chances to be a dull time for news the papers all over the land give columns to its discussion. The newspapers at such times usually print many interviews with citizens of varied occupations, and the thought appears over and over that such balls have at least the merit of giving employment to labor, evidently meaning employment additional to the total amount which otherwise would have been possible.

§ 9. **The fallacy of luxury.** The fallacy of this is essentially the same as that in the argument for waste and destruction. From the fact that these particular tailors, musicians, and florists would have less employment if this ball were not given, it is falsely concluded that, but for this ball, this particular income, or capital, would not be used at all. The average of employment in those special industries which minister to luxury is the result of and is determined by the average level of demand. There are more caterers and florists in a large city than in a crossroads village. It is true that a more than ordinarily gay season gives unusual profits to these enterprises, whereas an abrupt and extreme falling off in demand would cause them large losses and leave many workers lacking employment for that one season. But, if this limited demand became usual, capital and labor would shift to the other industries to which expenditure had shifted. Other modes of expenditure than twenty-five thousand dollar balls are possible, as, for example, twenty-five thousand dollar public libraries. Mr. Carnegie has preferred to take his dissipation in that form. That gives employment also; not less does

investment in new houses, in new railroads, and in new factories. More employment of a particular kind of labor is caused in one case than in another, but not more employment of labor as a whole and on the average.

§ 10. **Sudden changes in standards of luxury.** Luxury may be in various degrees and correspondingly may have various effects upon the state of wealth and income, and upon their movements. It might accompany a general condition of conservative abstinence, where only the clear surplus of income is given to luxury, preserving a static equilibrium. The degree of luxury may, however, change dynamically toward either extreme. First, it might increase so that it exceeded each spender's clear income, encroached upon capital, and became a policy of prodigality. The result of this must be to stimulate for a time all the trades serving to provide the superfluities, but eventually to leave them without a market for their wares. Thereupon the factors would have to be returned to the use for necessities. The community as a whole would be impoverished as well as the individuals.

Secondly, dynamic change may take the form of the decrease of luxury, expenditure being limited to necessities, and cumulative abstinence being carried to its maximum. The question of the effect of abandoning luxury should this dynamic change occur suddenly, is most difficult. What would happen if everybody at once began to live on the bare necessities of life? If this almost unthinkable change took place, all the factories and agents used for nonessentials would at once lose much of their value. A great industrial crisis would follow, as industry would have to adjust itself abruptly to a greatly altered standard of desires. What would happen, if that standard continued, would vary as human nature varied. There might follow an increase of population, as a result of earlier marriages and larger families; or a great improvement in machinery and other equipment, or an increase of charitable giving, or more probable than all else, a progressive lightening of labor, a use of the surplus resources and energy

in study, rest, and recreation. It is well-nigh impossible to suppose that with limited desires for the objective goods of the world there would continue undiminished efforts to produce goods and to save them. That would be miserliness become universal. In actual life changes of standard occur gradually. Economizing in material things by simpler living makes possible not only the increased efficiency of productive agents but the increased enjoyment of immaterial goods, a union of plain living, easy living, and high thinking.

§ 11. **Happiness and the simple life.** We are concerned here with the economic not with the moral issues involved in luxury, but the line between the two is sometimes hard to draw. Particularly hard is it in answering the question, Does luxury enhance the man's true psychic income? Does a greater expenditure on oneself give a larger life than a moderate expenditure would give? Surely, it is partly a matter of individual temperament and somewhat a matter of degree. Ostentation has its penalties. Undue striving after effect defeats its own purpose. Happiness results from a harmonious relation between man and the world. Life loaded with too much luggage staggers under the burden. The mere spending of a large income in selfish indulgence absorbs all the energies and interests of some men and women. Not only happiness in the narrow sense, but self-realization, is to such lives impossible. The tired faculties of the Sybarite cease at length to respond to natural pleasures. When the senses are robbed of their fineness, youth grows blasé, mature manhood is ennuied, life is empty. With the growth of incomes grows the strain to reach the self-imposed standards of frivolity. Insanity and suicide are on the increase. The stress of modern life often makes men yearn for the simpler joys. From the days of the Stoics to our own time, philosophers and preachers in times of great material prosperity have risen to praise the simple life, and to declare that happiness dwells not outside of men, that they must seek it within.

Wise consumption depends not alone on physical pleasures

but on the spiritual unity of the uses made of goods. Happiness and character are akin in the qualities of simplicity and unity. Happiness, so far as it depends on wealth, is a harmony of gratifications. Character is a harmony of actions. A successful life is a group of complementary deeds. There can be no harmony, without a central, simple, guiding principle. The wise and moral use of goods and the economic use of them have much in common. The results of the choice of goods are reflected in the health, intelligence, happiness, morality, and progress of society.

The spending of income for display has never been very successfully forbidden by law. The Middle Ages are full of futile sumptuary laws which sprang from the envy the nobles had for the wealthy merchants. The growth of good taste may do what formal law found impossible. In these days even when luxury in some respects is increasing, the use of great wealth takes more social directions. It turns from dress toward education, art, music, and travel; then ceases to be applied merely to self and family, and benefits the community. Nowhere else and never before has this movement gone so far as in America with the gifts of millions annually for education, libraries, art, scientific and medical research, and for social betterment.

§ 12. **The question of justice.** We leave untouched here the larger moral problem involved in luxury. It concerns the justice of large incomes rather than their spending. Most of the enemies of luxury condemn all expenditure of wealth above a very moderate sum, declaring that it is "unjust" for one man to have much while others are in poverty. This communistic doctrine pervades the teaching of many moral teachers, pagan and Christian. The question of luxury leads back to the question of distribution: Has the man honestly gained his wealth? If so, he may spend it with good judgment or poor, with good taste or bad, but, so long as he does not injure others in the spending of it, there is much vagueness and confusion in the talk of "justice" or "injustice." Each

must in large measure be his own judge of the wisdom of expenditure. If expenditures were regulated by the public, few persons would be within the law. But whatever the goods that are bought, if large incomes are acquired without social service, there may well be talk of injustice.

§ 13. **Animal choice.** The problems of human life and conduct are never quite simple and there is another side to the question of luxury. Its frankest defenders, while recognizing the fallacy of the make-work argument, and admitting its dangers to the individual, claim that in its general effects it is a great incentive to economic progress. There the argument for luxury has some validity, and to appraise it better, let us recall the function of developing desires in impelling men to greater effort.

Choice among animals depends on the environment; that is to say, all that the creatures below man can do is to take things as they find them. And so the environment shapes and affects the animal. The fish is fitted to live in the water, and suffers and dies if long out of it. The horse and the cow like best the food of the fields. And so each species of animal, in order to survive in the severe struggle for existence, has been forced to fit itself to the conditions in which it lives. After the animal has been thus fitted, its choice is for those things normally to be found in its surroundings. So different animals choose different things, but in most cases it is the environment that determines the choice, and not the choice that shapes the environment. However, migration with the changing seasons, or in search of food, is a most effective method by which the animals, led by their instincts, bring about a change in their environment; and many other methods are employed, such as nest-making and food-storing.

§ 14. **Choice by primitive men.** In simpler human societies, choices are mostly confined to physical necessities; that is, in the earlier stages of society, man's choices are very much like those of the animals. Man, like the animals, feels the pangs of hunger and he strives to secure food. He yearns

for companionship, for it is only through association and mutual help that men, so weak as compared with many kinds of animals, are able to resist the enemies which beset them. He needs clothing to protect him against the harsher climates of the lands to which he moves. To protect himself against the cold and rain, he needs a shelter—a cave, a wigwam, or a hut. Man is thus impelled to bend his energies to the choice of the things necessary to survival.

In the rudest societies of which there is any record, savages are found with desires developed in many directions beyond those of any animals. Men are not passive victims of circumstances; their desires are not determined solely by their environment, but are drawn to things beyond and outside of the provisions of nature.

§ 15. **Desires and progress.** As men become more the masters of circumstances, their desires anticipate mere physical needs; they seek a more varied food of finer flavor and more delicately prepared. Dress is not limited by physical comfort, but becomes a means of personal ornament. Men seek and choose the beautiful in sound, in form, in taste, in color, in motion. The rude hut or communal lodge to protect against rain and cold becomes a home. Out of the earlier rude companionship develop the sentiments of friendship and family life. And finally, as the imagination and intellect develop, there grow up the various forms of intellectual pleasures—the love of reading, of study, of travel, and of thought. Desires develop and transform the world.

In recent discussion of the control of the tropics, the too great contentedness of tropical peoples has been brought out prominently. It has been said that if a colony of New England school-teachers and Presbyterian deacons should settle in the tropics, their descendants would, in a single generation, be wearing breech-clouts and going to cock-fights on Sunday. Certain it is that the energy and ambition of the temperate zone are hard to maintain in warmer lands. The negro's contentedness with hard conditions, so often counted as a virtue, is

one of the difficulties in the way of solving the race problem in our South to-day. Booker T. Washington and others who are laboring for the elevation of the American negroes, would try first to make them discontented with the one-room cabins in which hundreds of thousands of families live. If only the desire for a two- or three-room cabin can be aroused, experience shows that family life and industrial qualities may be improved in many other ways.

§ 16. **Function of modern discontent.** Not only in America, but in most civilized lands to-day, is seen a rapid growth of desires in the working-classes. The incomes and the standard of living have much of the time been increasing, but not so fast as have the desires of the working-classes. Regret has been expressed by some that the workers of Europe are becoming "declassed." Increasing wages, it is said, bring no welfare, but unhappiness, to the complaining masses. If discontent with one's lot goes beyond a moderate degree, if it is more than the desire to better one's lot by personal efforts, if it becomes an unhappy longing for the impossible, then indeed it may be a misfortune. But a moderate ambition to better the conditions of one's self, of one's family, or of society, is the "divine discontent" absolutely indispensable if energy and enterprise are to be called into being.

It is a suggestive fact that civilized man, equipped with all of the inventions and the advantages of science, spends more hours of effort in gaining a livelihood than does the savage with his almost unaided hands. Activity is dependent not on bare physical necessity, but on developed desires. If society is to develop, if progress is to continue, human desire, not of the grosser sort, but ever more refined, must continue to emerge and urge men to action.

§ 17. **Luxury as an incentive to progress.** It is impossible to know just how important the service of luxury as a pacemaker has been in this progress in the past, tho doubtless it has been great. But what is needed now is a rising standard of taste in the lives of the many, not excessive display or

indulgence by the few. But a dead level of conditions seems to be unfavorable to invention, arts, and industry. There must be some motive for emulation, and for ambition to attain finer material means of enjoyment after the bare necessities of life are provided, or no new forms of wealth will be demanded. Necessities, strictly understood, are things absolutely essential to life and health. No hard line can be drawn between necessities and comforts, between comforts and luxuries. The level rises; it is a trite and true saying that the luxuries of one age become the necessities of the next. The rise of the bathtub in the nineteenth century is an epitome of the progress of civilization in that period. The free baths in our cities surpass the hopes of the wealthy of a century ago. The automobile was first the toy of the rich, but is becoming the necessity of daily life. Even the meaner motives of envy may have their social and economic functions. The lower social grades, emulous of the higher standard held before them, labor with greater energy. The successful and capable enterprisers, not content with necessities, continue to give their efforts to production. Even abstinence may be stimulated by the hope of attaining for one's self and one's family the imaginary joys of conspicuous display. Doubtless these effects are more or less offset by the temptations to live beyond one's income, and to seek wealth in devious ways to make luxury possible. Still, luxury in a moderate measure has had, and still has, a part among the forces of dynamic society.

CHAPTER 38

ABSTINENCE AND PRODUCTION

§ 1. Dynamic movement of saving. § 2. Orderly government favorable to saving. § 3. Private property favorable to saving. § 4. Opportunities for investment. § 5. Get-rich-quick schemes. § 6. Slower and safer plans. § 7. Relation of the interest rate and saving. § 8. Bountiful income and abstinence. § 9. The interest rate and waiting. § 10. Duplicate agents and slower processes. § 11. Lower interest rate stimulating invention. § 12. Time-price determining the selection of processes. § 13. Newly discovered process; effect upon interest rate. § 14. Railroad betterments and the rate of interest. § 15. Effect of war upon the interest rate.

§ 1. **Dynamic movement of saving.** Let us, finally, examine the influence for dynamic change that is exerted by man's choice and use of goods with relation to time. We have already considered time-preference from the individual standpoint (Chapter 24), and have seen how with varying degrees of abstinence the individual's fortune may be maintained, or decline, or advance. In the community as a whole, individual time-choices more or less neutralize each other. Prodigality versus abstinence, spending versus saving, of all the members of the community taken together, have, as a resultant, the maintenance or the reduction or the accumulation of economic agents. Accompanying this movement more or less closely, now ahead and now lagging behind, go changes in the rate of time-price as shown in the rate of interest. Let us look first at some conditions favorable to saving, and then at some adverse movements, making for the lowering of the economic environment.

Abstinence varies from man to man and from one period to another, but there are certain general conditions that appear

to be favorable to the development of abstinence as a widespread habit of mind in society, and that contribute up to a certain point, to a general state of accumulation.

§ 2. **Orderly government favorable to saving.** As saving results from a comparison of the future with the present, any lack of certainty regarding the future decreases the appeal it makes. The theory of probabilities applies roughly in this matter, and a use is only half as great when there is but one chance in two of ever getting it. Political security against foreign aggression is favorable to saving. War is not only destructive of wealth and of industry in the zone of conflict, but it weakens the motives of thrift in the citizen. The energies of the people are given to fighting and to preparation for fighting, and the national resources are used regardless of the future need. Domestic order is favorable to saving. Where there are frequent revolutions as in some countries and periods in South America, and where brigandage is common, as it has been in Italy, Macedonia, and Bulgaria, the motive for saving is greatly weakened. Oppressive government, especially when it takes the form of irregular taxation, decreases the certainty of income and in that proportion weakens the motive for the accumulation of property. While the miserable subjects of the state live from hand to mouth, the very sources of the public revenue disappear. Improvidence grows upon such a people into a prevailing national custom; ambition is wanting; industry is the sport of chance; economic order and economic prosperity are impossible.

§ 3. **Private property favorable to saving.** Social institutions that give a motive to the individual seem to be essential to effective and continuous saving. Among these institutions the most important are the family and, closely connected with it, the institution of private property. The effect of this in its best manifestations is to fix the responsibility for each person's economic welfare upon himself or upon his family. Through the institution of private property the state says to men: "Save if you will; the wealth and its future fruits shall

be yours. But if you spend in the present, you alone will suffer the consequences.'' The institution of private property never is found in an ideal form. Corrupt public officials weaken its working, dishonesty in business and the oppressive monopolistic power of a few exaggerated private fortunes reduce its benefits. Every propertyless family marks a partial failure in its purpose. These limitations, pretty generally admitted, have made private property a favorite object of attack by radical reformers. Its abolition has been advocated from the days of ancient Greece to our own days, as the remedy for all the great social ills. We are not concerned here with the moral judgment of the question, but with the pure economic aspect. Private property gives men an incentive to subordinate their present desires to the future. Private property has served to fix responsibility for waste and improvidence and to multiply the rewards of abstinence. History shows as yet no communities where any other motive has been effective in inducing large numbers of men regularly to conserve economic agents and in maintaining a progressive economic state.

§ 4. **Opportunities for investment.** Opportunities for the investment of small savings favor the spread of a spirit of saving. The institution of small property, peasant proprietorship, has worked powerfully in this direction in many parts of Europe; and the same effects have resulted in America from the wide diffusion of property in agricultural land. If the decline in the number of small independent farmers has somewhat weakened this influence in America, other agencies are effectively performing the same functions in other ways. Savings-banks, penny banks, building and loan associations, penny-provident funds, and other convenient means of investing small sums, encourage men to reduce their tobacco bills, their candy bills, their saloon bills, and to lay aside for the winter's coal, for the children's education, for houses, for business investments, or for old age. The French government, by the sale directly to the people of national bonds in small de-

nominations, both recognized and helped to strengthen a custom of thrift in the small investor that has probably become more widespread in France than in any other country. Probably no one thing has given a greater stimulus to saving than has the development of insurance and the endowment policies in connection with it. The modern systems of compulsory accident and sickness insurance, and of pensions for old age, are accumulating large funds (invested in securities) and are collective saving on a large scale (whether it be deemed the saving by employers or by employees). Great modern corporations have displaced many small business enterprises into which so much of the saving of the past was put, but have opened up other large fields of choice for investors in notes, bonds, and stocks. Of late some American corporations and governments have begun to issue bonds in denominations of less than $1000, known as "baby bonds," especially of $100 and $500, and their sale is steadily increasing.

§ 5. **Get-rich-quick schemes.** Nothing discourages abstinence more than the example of the loss of hard-won savings through unfortunate investments, as happens with many million dollars of small capitals every year. A large part of these losses would be avoided if certain simple truths were generally recognized and certain maxims observed. Security against loss of principal is more important than promises of a large interest rate. It is well to remember that the prevailing rate of capitalization in the community sets the outside limit of safe investment to the investor without special knowledge and judgment of the conditions. Unusual percentages of income (over 4 or 5 per cent) are bought by the small investor at the cost of disproportionate chances of loss. Buying stocks on margin, real estate on options, or anything partly on credit, is not true investing; it is speculation, and the chance is large that it will end in disaster to the "outsider" and the "lamb." The stranger offering remarkable returns on small investments has almost certainly a flaw either in his judgment or in his morality. There are now and then good inventions which need

but capital to develop them, but to judge their practical merits requires expert knowledge and business experience or influence which few possess. Only with the advice of trusted friends with these advantages should the inexperienced venture to invest outside of accustomed lines in the hope of unusual returns. "Get-rich-quick schemes" mean get-poor-quick for every one but their promoters. Patents from washing machines to chromatic printing, new processes from burning ashes to extracting gold from sea water, lead mines and gold mines which prove only to be "salted" mines, rubber plantations with elastic possibilities, electric "air line" roads destined ever to remain in air—these projects yearly lure millions of small savings from the trusting.

§ 6. **Slower and safer plans.** The average man investing outside of his own business should travel the well-marked roads: government, state and municipal bonds; stocks, or preferably bonds, of the more conservative corporations bought outright at other than times of booming business and high capitalization; real-estate mortgages in the neighborhood or placed through reliable agencies; shares in building and loan associations; deposits in savings banks; life insurance for breadwinners, first and mainly on the "ordinary life" plan or with payments limited to the earning years; and finally, old age pensions and life annuities. Carefully selected investments along these lines will yield to the average man in the long run much more than more active investments with the alluring promises of large dividends. If the small savings of the masses were more safe and remunerative, a wonderful stimulus would be given to industry, and the general welfare would be enhanced. In part no doubt this most desirable end can be furthered by public regulations in protection of investors, in part it must be brought about by the progress of sound principles of investment among persons of small means.

§ 7. **Relation of the interest rate and saving.** A question much debated is: should a rate of interest be looked upon as the cause of saving. Some persons might be willing to save

somewhat were the rate of interest much lower, just as (on the hypothetical sellers' curve) some sellers might have been willing to sell for less than the market price if they had not found buyers willing to pay the actual price. In every loan market the price comes to equilibrium at a point lower than some borrowers would have consented to pay, and higher than some lenders would have consented to take. If the rate were much lower there would be many more borrowers and many fewer lenders. A higher rate reduces the number of borrowers and increases the number of lenders; borrowing is by so much discouraged and abstinence is given a larger premium, a reward for waiting.[1]

A high interest rate does not insure a high degree of cumulative abstinence in a community; it is indeed nothing but the *visible* index of a low degree of abstinence (a high rate of time-preference), and interest will remain high till abstinence grows. The rate of interest marks the point of equilibrium in the market between present and future value of incomes,

[1] A man carries a dollar in his pocket on a journey without getting interest, but he (now) values the future purchase more than the present purchase. Likewise, by persons ignorant of banks, dollars are sometimes laid away for sickness, old age, and other needs without the inducement of interest. The owner might even be imagined to pay for the safekeeping of the money in the meantime. Some have made much of these cases, have called hoarding a case of zero interest, and the payment of storage charges a case of negative interest. *These are not cases of interest at all by our definition*, they are cases of time-preference for future money. The zero rate of time-preference does not extend to goods generally, for this would mean an absolutely indifferent choice between present and future uses, gratifications and goods, and an infinite capital value for the smallest permanent series of incomes. (See above, under time-value.) These acts of saving money occur at a time when the individual is showing time-preference for the present in numberless ways. In these cases the money is for the time being withdrawn from its use as a medium of exchange and is turned to its use as a storehouse of saving. Like fruit in a plentiful season and ice stored in winter it is kept because it is relatively plentiful now, and a part of it if kept will provide necessities for a time of relative scarcity.

like the pointer on the spring balances. A fall in the rate of interest is not so much the *cause* of lessened saving in the community as a whole as it is the effect of increased saving. The causal order is from the growth of the spirit of saving in large classes to a falling interest rate, which continues to fall as long and as far as the cause is operative or is not offset by the acts of others. The truth in the view that a fall in the interest rate decreases saving is this: that a fall in the rate of interest may cause *some individuals* to save less. The fall is the resultant of the acts of other individuals who are willing to go on saving at a lower rate of interest than some other individuals are.

True, custom, example, and training have so fixed the habit of saving in many individuals that they would continue to accumulate just as much after the rate of interest fell. It is even conceivable that a few, in middle life, with a pretty definite idea of the amount of money income needed for a competence in old age, or to leave to their children, might be spurred to yet greater efforts when the investment premium fell. But this must be confined to a peculiar group of persons at a particular stage in their lives and is not characteristic of the whole community. Abstinence may, like jealousy, grow by what it feeds on, but only in some few older natures, not in the ever-renewing generations. It is not true of men in general that the longer they have to wait for income the easier they find it to wait.

Lending at interest was formerly very generally prohibited and the rate of interest was always high in those times. Well-meaning reformers are always proposing the prohibition of interest as a remedy for social ills. If this were done those savers who could buy and manage the agents themselves would still have strong motives for abstinence, but those who could not be active managers themselves would be deprived of the stimulus of a premium for saving. In itself the mere prohibition of contract interest would tend toward a lowering of the

quality of the environment, and this would result in a higher rate of time-preference.

§ 8. **Bountiful income and abstinence.** Another question that has proved puzzling is as to the relation between the amount of income a man enjoys and the degree of abstinence. For if, as income increases, abstinence becomes easier, then improved methods of industry should have cumulative effects—not only making possible a larger sum of goods to enjoy now, but multiplying the amount of saving to produce other goods, and constantly lowering the rate of interest.

True, it is easier for a man with habits of life somewhat fixed to save more when his income rises. (See above, Chapter 24.) But it is not safe to say as much of men altogether, where the younger generation has time to adjust its tastes to the larger income. A community does not grow old in the same way that an individual does. (See above, under statics and dynamics, Chapter 32, section 2, on renewal of the generations.) "The children are always new" and each generation starts where its fathers left off. For this reason there appears to be little relation discoverable in history between the bountifulness of incomes in successive generations (through the discovery of richer lands, the use of better tools, machinery and methods) and the rate of time-preference. Such differences in the interest rate as appear can be explained through the changing conditions more or less favoring saving, rather than by the productiveness of industry in a community. Amount of production is only one factor in determining the rate of time-preference from generation to generation, and not the primary factor. And so, while interest was less in the seventeenth century in some European countries than it had been for centuries before, it does not seem to have fallen much, if any, in the chief commercial centers during the last two centuries, while enormous strides have been made in the productiveness of industry. It has been a matter of wonderment to social students that the rate of interest continued so high

in the United States (higher than in Europe) in the last half of the nineteenth century, when the general level of incomes was so much higher than in the countries of Europe, or in any other country in the world theretofore. In fact, a very large portion of the American people have not been contributing in any degree to cumulative saving; rather they have been heedlessly consuming fully their own comparatively large incomes made possible by and drawn from the consumption and destruction of the natural resources of the country. (See Chapter 35.) The premium on the present as compared with the future may thus be just as high or higher when many men are living in great bounty as when all are in a meager environment. When they have large incomes they may save a smaller proportion of what they have, and yet possibly continue to accumulate more rapidly than when their incomes were smaller. Moreover, a large part of recent progress has been through the invention of simpler and better methods rather than through mere multiplication of old appliances. Time-preference is a psychological factor, which can not be explained by physical productivity. The attitude of men toward their environment has tremendous economic consequences.

§ 9. **The interest rate and waiting.** Let us now review some familiar facts to see the interrelations of abstinence, capitalization, and the rate of interest, and the dynamic effect that the choice of technical methods of production eventually has in a community.

Individual rates of time-preference unite into a market rate of time-price expressed primarily, in the case of durative agents, by the capitalization of the series of incomes. The capitalization of a series of incomes treated as perpetual is exactly in the ratio of the years' purchase. The rate of interest that arithmetically corresponds with this is the reciprocal of the years' purchase (e.g., $\frac{1}{20} = .05$). Practically by the law of substitution as applied to investments, interest rates and capitalization rates are brought into correspondence.

With each reduction of the time-price goes an identical arithmetic change in the rate of interest and a reciprocal increase in the capital sum, and a proportional decrease in the fraction of capital investment coming to the owner as income. The greater the degree of abstinence, the smaller the fraction of investment value that owners must take as income, the longer they must wait for an income bearing a given proportion of the capital, or equal to it, to accrue. The number of years' purchase, therefore, might well, in this connection, be called the waiting time, or waiting-period. (See Figure 60.)

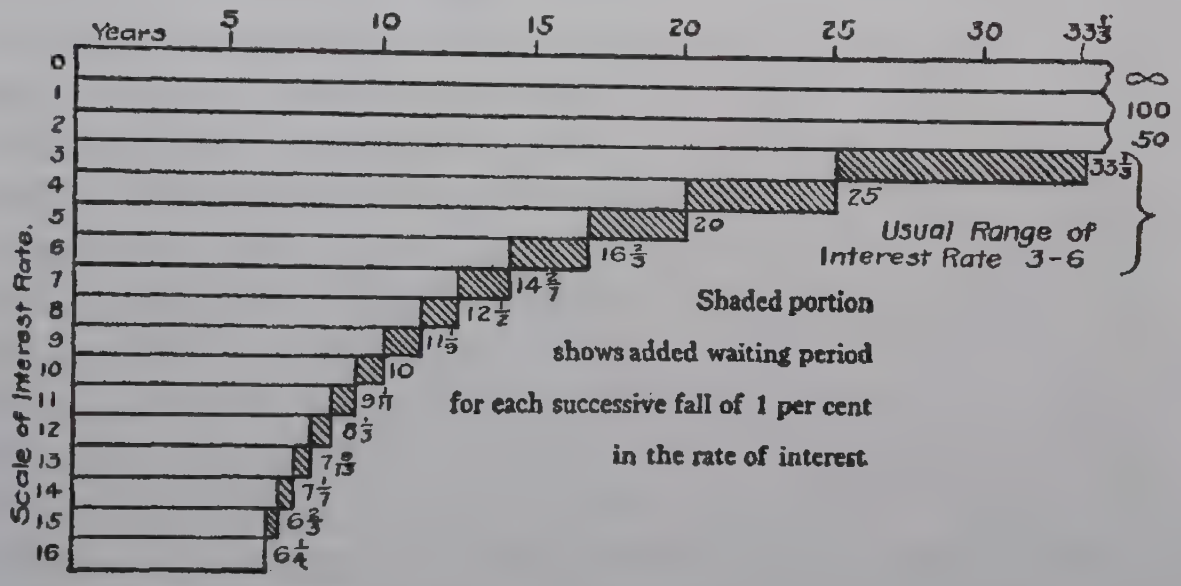


FIG. 60. INTEREST RATES AND CORRESPONDING WAITING PERIODS.

Now let the time-price rate be twelve and corresponding with that would be a rate of interest on money loans of twelve, and a capitalization of $8.33 for each $1 of income. If the spirit of abstinence grows and extends in the community from whatever combination of favoring conditions, so that the time-price rate of 10 (or any lower figure) results, the change is registered in a corresponding rate of interest of 10 per cent and the capitalization of each dollar of income at $10. This shows itself first in the capitalization of all existing incomes (capable of capitalization), and would do so if there were no technical, productive process whatever, merely a limited number of incomes. All future durative uses attributable to agents are marked up in present price. There are "takers" for cap-

ital now that will yield incomes but $\frac{1}{10}$ of its face, or what is the same thing, persons willing to have the same income spread over $1\frac{2}{3}$ years longer, *i.e.*, 10 years instead of $8\frac{1}{3}$ years. This must cause some transfers of capital, for not all individuals have reduced their time-preference rate, and some will yield to the temptation to get $10 of present capital, whereas they could have resisted the offer of $8.33. The lower the interest rate the greater the temptation for the less abstinent members of the community to relinquish to the more abstinent the guardianship of future incomes with its task of waiting.

§ 10. **Duplicate agents and slower processes.** Another effect must show itself in the technical methods of production. The time-price signals that there are investors ready to wait longer for the same income from a given investment. There are investors willing to divert more present goods into future uses, and to impart to future uses still more of futurity. This adjustment at once begins in the economies of all individuals where time-preference is in accord with the new rate. One mode of adjusting productive processes is to multiply the tools and agents already used. Duplicates are placed wherever it will be most convenient. Where formerly the use of a second agent did not justify its cost of making, now it can be made to earn the smaller income[2] needed to balance its capital value.

Another mode is to let the old processes go on a little longer,

[2] This is a net income, of course. The new tool yielding less urgent (marginal) uses than the first one, yet requires some shelter and repairs, and has as great or greater liability to rust, decay, go out of style, etc. With the multiplication of like tools, the added units are less often used, and for less urgent purposes, yet the cost of repairs and maintenance grows greater, leaving a smaller net income with each increasing agent (see above, under usance). The more duplicate agents one has, the greater the forethought, punctuality, and watchfulness required to keep them in good condition. If the farmer has but one hoe and one ax, they rarely rust; if a woman has but one dress it can not be eaten by moths. The point of best economic equilibrium, however, is shifted by the change of time-price here under consideration.

with no appreciable change in the form of equipment, where this will bring an increase either in quantity or value of product and therefore enough more income to repay the larger period of waiting for its arrival. Unless other possible processes and kinds of tools and machines are already known (have been discovered and invented) duplicating and slowing-up are the only two ways of adjusting production to a lower time-price. And nowhere and in no time before the modern period of science and invention (say 1700 A.D.) does there seem to have been any crowd of unemployed processes, waiting, so to speak, just outside the gates of industry. So it might happen that a large fall in the interest rate would not be quickly followed by any noticeable change in the external forms of production, either the machines or the methods. Such a change had to await the slow process of discovery and invention, to occupy this new territory which abstinence had opened up for settlement. Great changes came about by slow adaptations and by accretions of new ideas. The simple truth must not be forgotten that until a better technical process becomes known it can not be adopted even if the rate of interest were to become zero.

§ 11. **Lower interest rate stimulating invention.** But on the other hand, a fall in the rate of interest (and the conditions of saving it reflects) must give a new stimulus to invention by opening up a new zone of waiting time, or in other words, by embodying a definite offer of investors to back any new method (whether more indirect or not) that can be found by experience to lie between the old standard and the new standard of waiting time. The lower the rate of interest, the greater the change in waiting time that corresponds with a further fall of 1 per cent. When interest falls from 10 per cent to 9, it means a lengthening of the waiting time by only $1\frac{1}{9}$ years; but when interest falls from 5 to 4, it means a lengthening of the waiting time by full 5 years. With each further fall of 1 per cent in the rate of interest the extension

of waiting time goes on at an accelerating rate. At an interest rate of 1 per cent the waiting time would be a hundred years, and at an interest rate of zero (only abstractly conceivable) the waiting time must be infinity. If the interest rate were to fall to 3 and again to 2 per cent it would bring within the range of the economic an almost inconceivable number of technical processes which can not now be used. Viewed in this light, the remarkable outburst of practical invention and of new industrial processes in western Europe (particularly in England) in the eighteenth century, seems to have been partly due to a lower rate of interest (as compared with former centuries) following the more settled conditions, the growth of commerce, of banks, and of more regular investment markets in the financial centers.

This development of invention has been in turn greatly aided by the progress of the pure sciences since the seventeenth century, brought about by investigators in universities and outside, who have continued to heap up a great mass of knowledge of nature from which the practical arts can increasingly draw. To-day it is a matter of common knowledge that there are many better technical ways of doing things in every craft, ways which "do not pay" under present conditions. Many of these lie just outside the border of practical, profitable utilization. A fall in the rate of interest now makes possible the adoption of many technical processes that were formerly too slow in yielding the income on the investment. Partly this means the making of new and better instruments which call for a larger initial outlay to secure a certain income, partly it means the choice of chemical, botanical, mechanical, electrical, or other methods that yield larger results by tying up the equipment for a longer time.[3]

[3] This change is often said to be one "to more time-consuming processes." This phrase is easily misleading. It can not properly refer to the length of the technical process itself, but merely to what we here call the waiting-time for a certain income to mature on a certain investment. One technical process may require only a few days from the

§ 12. **Time-price determining the selection of processes.** Take now a situation where there is a prevailing interest rate with its corresponding equilibrium of investment, and consider what is the effect of the discovery of a new method of production known to every one,[4] and of the invention of a machine that calls for a smaller investment (even after paying royalty to the inventor). Among many new methods and new machines, all degrees of advantage will be found in all varieties and combinations, ranging from those that require actually less equipment, use less material, require less labor for their operation, shorten the time for the process, reduce the number of technical steps, increase the quantity, and improve the quality of the product, to the opposite in each of these respects. Regarding the change from the old to these new methods and machines, two questions occur: (1) What determines where the line is drawn in making these changes from old to new methods? (2) What is the effect of the new methods upon the existing degree of abstinence?

So far as this change is rationally and wisely made, any new method will be adopted that will yield an income falling within the waiting-zone corresponding with the interest rate. Of course all of the extremely advantageous kinds just mentioned would be adopted, and others up to the limit of paying investment. Beyond that lie many processes which are technically possible but not economically possible. All of the ex-

making of the first machine to the finishing of the product, it may permit a turnover several times a year (the making of new machines to be rapidly worn out) and yet "not pay," because it is a slow income-yielding process. Whereas a machine, that lasts and a process that goes on for years until the product is ready, may yield income at such a rate that it is economic when interest is very high. (See ch. 21 on the relation of technic to time.) If the term time-consuming be used at all it must be taken in an income-ripening sense, not in a technically productive sense.

[4] Trade secrets, patents, and temporary monopoly privileges, where the better process is limited to one enterprise or to a few, affect individual profits at first rather than the general economic level.

isting factors—labor and material resources—are taken up, put into use, before these are reached. The limit is set by the existing rate of time-price, reflected in the rate of interest. As the rate of time-preference in the individual's choice, so the rate of interest in the community, draws a line among the various technical processes analogous to the isothermal line, marking off those that yield incomes at a lower from those that yield at a higher time-rate.[5]

§ 13. **Newly discovered process; effect upon interest-rate.** What effect would the adoption of a newly discovered process have upon the time-price rate?[6] If it takes a smaller equipment than the old, its effect is that of releasing some productive agents for other processes before excluded; that is, it enables a community with the same abstinence to resort to longer processes and thus lower the time-price. Or if the new method gives increase in product with the same investment, the result is a fall in the price of the product, and a recapitalizing of the sources of the materials, etc., to bring income and capital value into accord with the prevailing rate. Then the question becomes: What effect will this have on the prevailing rate of time-preference? As the total income of the members of the community increases with the more bountiful

[5] Among the processes always waiting on the borders of utilization, known but not adopted, must always be many which are technically more indirect than those before in use; but they have been rejected not at all because of their technical indirectness, but because they involved either too large or too long an investment. If the indirectness involves initial cost—as for materials to make the complex parts—then that influences time-choice by increasing the investment; if it involves cost of operation because of complexity of parts and difficulty of repairs, this influences time-choice by reducing the net income expected. Given a certain investment, and a certain income in the future, and time-difference is the only factor that influences choice; technical indirectness is a merely incidental element.

[6] Observe that we are considering the case not of a better technical method already known, and now first adopted because of a fall in the interest rate, but the case of a new method adopted while the old rate of interest still prevails.

production, and their present desires are better provided for they should find it easier to abstain. In itself this should result in more saving and a lower interest rate. But the final result so depends on changes in the standard of living, education, etc.,[7] which are themselves usually elevated by more bountiful production, that the answer is not easy. The experience of the past two centuries shows that our progressive economic societies are constantly incorporating into their processes great improvements which raise the total production of objective goods *per capita*, while they maintain about the same rate of interest from generation to generation. Both present and future expected incomes are more bountiful than they were in the past, but the ratio of their time-valuation remains substantially unchanged.

§ 14. **Railroad betterments and the rate of interest.** The railroads in America have given a good illustration of the relation of the interest rate to improvements. In railroad financing, cost of operation is compared with fixed charges, i.e., the interest on the bonds needed to make an improvement that reduces costs. Our main lines in America were built when the interest rate was high (before 1873). Expensive improvements, the straightening of curves, the tunneling of mountains, the reducing of grades, the replacement of lighter by heavier rails, accompanied a fall in the rate of interest. A fall in the interest rate disturbs the equilibrium that has been arrived at, between the cost of operation (the amount paid for wages, coal, etc.) and the income on permanent investment. If the rate of interest has been 5 per cent and falls to 4 per cent, many permanent improvements before unwise become economical. A net gain may result from increasing the capital investment in order to reduce the cost of operation per unit of traffic. One thousand dollars paid annually in wages balances a 5 per cent interest charge on a capital investment of $20,000; it balances a 4 per cent interest charge on $25,000. It thus becomes profitable for the railroad to abandon or

[7] See on abstinence, sec. 8, above, and ch. 24.

throw aside an enormous capital represented by the old, less perfect roadbed and equipment, and build new with capital borrowed at a lower rate. The changes of this kind one sees in traveling on the great and progressive railroads, reflect in part the growth of traffic, but in part also a change of the interest rate.

§ 15. **Effect of war upon the interest rate.** The commonly observed fact that a great war calling for much borrowing raises the interest rate is easily explained as the undoing of the process of saving and loaning. It presents a case of waste on an enormous scale. Waste and destruction are in their nature and in their main effect upon time-preference, interest, and productive processes, just the converse of saving and improving wealth. In the case of war the borrowing comes first, to get capital with which to buy the many supplies and munitions needed to maintain armies and navies. Goods are destroyed in enormous quantities: horses, wagons, gasoline, weapons, ammunition, ships, foods, clothing, etc.; great numbers of men, both combatants and non-combatants, are withdrawn from many of the usual productive pursuits and are giving every energy either to producing munitions of war or to destroying the soldiers and the wealth of the enemy—roads, fields, buildings, machinery, stores of all kinds. Within the region of hostilities the economy is reduced well nigh to the stage of savagery. Men become beasts of burden, and are obliged to carry on production with meager equipment. Even were a war in the territory of two modern nations limited to a few months, the destruction would be enough to consume the usual savings for years. The present need of nations at war is for enormous quantities of present goods; after the war the pressing need to rebuild their houses and their ruined industrial equipment will call for great quantities of present goods of another kind. This result is anticipated at the very outbreak of hostilities. The interest rate rises, and the capital-value of all existing securities with fixed incomes is reduced accordingly. During the continuance of the war the rising

interest rate slackens investment in industries in countries at peace. The unparalleled economies of the people of warring nations, the lowering of their standard of living, the cessation of a large share of the costly entertainments and of social luxuries, and the sacrifices they make to support their governments, go far to offset the destruction, and thus to limit the rise of the interest rate. Notwithstanding this, the world's industrial equipment halts its progress and goes backward as, through the medium of international credit, this destructive, anti-saving process of war spreads its effects over the nations.

CHAPTER 39

VALUE THEORY AND SOCIAL WELFARE

§ 1. Epoch of the dismal science. § 2. Communism and value theory. § 3. The single-tax doctrine. § 4. Optimistic theories of wages. § 5. An organic theory of value. § 6. Labor and its environment. § 7. Aspects of wealth. § 8. Welfare. § 9. The paradox of value in practice. § 10. Conflict of individual and general interests. § 11. Business economy and social economy.

§ 1. **Epoch of the dismal science.** A preliminary word. The foregoing survey of the dynamic forces and changes in economic society (Part VI), incomplete as it is, may yet serve in some measure to broaden and to extend our understanding of the study that preceded (Parts I to V). This chapter concluding the outline of economic principles will give: first (sections 1–4), a suggestion of some of the far-reaching conclusions which economic students have in the past drawn from their theories of value in respect to the trend of popular welfare; secondly (sections 5–6), a general summary of the positive theory of value that has been developed in its details throughout this volume; and thirdly (sections 7–11), a brief outline of the relations between wealth and welfare, value and utility, individual advantage and the general good.

The value-theory one holds is sure to affect one's view of economic progress and one's attitude toward projects of social reform. The theories from the middle of the eighteenth to the middle of the nineteenth century, however varied they were in other respects, nearly all gave a gloomy view of the condition of the masses. Such were the theories of the physio-

cratic school in France, consisting of a small group of highly educated and aristocratic men of liberal sympathies in the generation preceding the French Revolution of 1789; of the so-called "orthodox" or "classical" economists in England composed of the writers from about 1800 to 1850 that were in sympathy either with the landholding or with the commercial classes; and of the socialistic or laboring-class theorists, from 1789 to the present. It was the prevalence of such a view which caused Carlyle to characterize political economy by the term still sometimes heard, "the dismal science."

However greatly these various groups of thinkers differed in other respects, they united in the belief that the labor incomes of the masses must remain near the starvation point. Indeed, this was little more than a generalization of the observed conditions of the time. The population of Europe was increasing, the pressure for food was strong, and the cultivated area was not increasing proportionately. While all the forms of industry most common in cities were increasing, while the wealth of the cities and the rents of rural landlords were increasing, poverty was growing among the peasantry. Owing to exceptional conditions this was especially true in England during the Napoleonic wars, 1793–1815. (See Chapter 34, section 8.)

In this situation the thinkers of that period confused the truth of the limited powers of agricultural land with the false inference and prophecy of a necessarily decreasing relative food supply and decreasing wages. The economic theory of the "classical" economics centered around this fact and the false inference from it. The condition of the masses was believed to change rhythmically, rising from time to time, only to return, through the pressure of population, to its former level. Their pessimism was all due to their view of the food problem. They doubtless underrated the forces operating for volitional control. In another regard they were too optimistic, for they had no thought that timber, mineral, and other natural stores might be exhausted, with the result of decreasing

prosperity. The things made from these materials were thought to be the "product of labor," and capable of unlimited increase. It is just these materials whose increasing scarcity is one of the greatest economic problems that society has now to face. (See Chapter 35.)

§ 2. **Communism and value theory.** The "orthodox" economists gave currency to two erroneous doctrines: (a) that labor is the sole source of value; and (b) that the laboring classes must forever be reduced to a bare subsistence. They were quite heedless of the use that would be made of these doctrines in political discussion to attack the existing order of society. They did, it is true, modify and qualify both these doctrines, sacrificing thus the consistency of their reasoning, while gaining in common sense and in harmony with the facts. The communists, however, accepted these doctrines in their most unqualified form, and drew from false premises the false conclusion most natural for the human mind, that the existing order was fundamentally unjust and hopeless for the masses. For if wages were always to be forced to a bare minimum of subsistence, it followed that the other shares (incomes of landlords and of other owners) must absorb all the benefits of improved machinery, better methods, and general industrial progress.

The communistic theory of value is akin to the "classical" theory in holding that capitalists absorb all the benefits of progress. But the communists refused to recognize that any useful and necessary service in social production is performed by the owners of wealth, or by the savers and lenders of capital, or by the employers of labor. They did not even attempt to distinguish the part in the production of value due to manual labor from the part due to brains, to science, to art, to supervision, or that part in turn from the part due to the saving, conserving, and provision of the agents of production. The whole elaborate industrial environment and its skilful management that made possible modern industry they took for granted as at the laborer's command and credited to him

the whole value of the product. All profits made by employers were called robbery, and capital was looked upon merely as the weapon by which the act was committed. They accepted the conclusion of "orthodox" economic theory and magnified it, declaring that under a competitive condition of society the laboring man, tho he produces everything, must be forever ground down in hopeless misery. This they called "the iron law of wages." They held, therefore, that the only hope of the laboring masses was to do away with competitive society and to substitute for it the governmental control of all industry.[1]

§ 3. **The single-tax doctrine.** The single-tax doctrine of Henry George was likewise built upon a value theory. Tho George eloquently denied the law of diminishing returns (including the principle of proportionality applied to land uses), he accepted the conclusions that the classical economists drew from it, that ground rent must be an ever-increasing share of the national income. He believed that the landholders get all the gains that come to society as a result of science, invention, and machinery. Hence his belief expressed in the title of his work, "Progress and Poverty," that, with private property in land, the outlook for the laboring classes is hopeless. In George's opinion neither wage-earners nor such capitalists as are not landholders have any share in the benefits of industrial progress. He saw no problem om monopoly anywhere except in connection with land ownership. The evil, as George saw it, called for a radical measure of reform, namely, the taking of all the rent of land (a single tax), for public purposes as a common instead of an individual income. This,

1 The communist theory of that period was originated or elaborated by such men as Karl Marx, Friederich Engels, and Ferdinand Lassalle, labor leaders and political agitators, who found a ready weapon in the bungling economic analysis of the time. The claim of a scientific basis for communism (now usually called social-democracy or socialism) has continued to be made by their followers, most of whom still boast that it is nothing but the (now admittedly defective) orthodox theory of value carried to its logical conclusion.

he believed, would be enough to replace all other forms of taxation.

§ 4. **Optimistic theories of wages.** Some recent theories of value have assigned to labor a more hopeful position. Most optimistic was "the residual claimant theory," of wages presented by the American economist, Francis A. Walker. His view was that the various shares of production, such as land-rent, the income from machinery, etc., and the enterpriser's profits, were fixed by forces independent of wages, and any increase in the output must therefore fall to the laborer as the residual claimant. This appears to explain somehow the rise in wages in the past century, but the fallacy of its method is evident. It involves the circular reasoning that land-rent (a surplus over cost of production) is fixed regardless of wages, whereas the cost of production itself is made up chiefly of wages.

Another American economist, John B. Clark, was led by his theory of profits to a most hopeful view as to the future of wages. Profits he considers to be essentially the reward for introducing new methods into the productive processes, which gradually accrue to the general benefit. As profits thus disappear, the average wage-earner is correspondingly uplifted. In reaching this conclusion Clark omits from consideration the growing scarcity of natural resources and narrows his conception of profits to the point where industry is self-organizing and self-directing. Some facts lend support to every one of these theories of social progress, radical and conservative, gloomy and hopeful, but other facts refuse to be harmonized.

§ 5. **An organic theory of value.** Let us turn from negative criticism to a summary of the positive ideas as to value that are contained in the foregoing chapters. We have not been content with an easy but superficial explanation of value. We have come to see that the value of the simplest commodities (a dozen eggs, a pound of butter, a bushel of wheat), is a part of a great complex problem. We have not explained it

fully, we have only begun to understand it, when we take the desires of a group of traders in a market as a starting point, and have even drawn a diagram showing the meeting point of price. For these desires in turn have been conditioned by manifold influences, stretching on to other men, other goods, other lands, and other times. Nor can we rightly conceive of a theory of value as being a thing apart from a theory of usance, of labor-incomes, of time-preference, etc. These are all but special aspects of a general theory of value, and each must be thought of as a part, or aspect, of what might be called an organic whole, or perhaps better, a general economic situation. From the first and repeatedly this thought was brought to the reader's attention, in treating the static theories;[2] and the thought has pervaded our whole discussion of the dynamic aspects of economics. In respect to value, as in other ways, it may be said: "We are all members, one of another." With this thought now clearly in mind we may take a final view of the subject.

The productive process is a unity and the values of the different agents and incomes in our actual economic organization bear a mutual relation to each other. Yet the unit itself (the total to be divided in an industry) rises or falls as a result of many forces coöperating or conflicting; any share, therefore (as that of the laborer), depends both on the size of the total product and on the proportion he gets out of it. The factors and agents of production mutually employ each other and thus prices are fixed by reciprocal demand. (See Chapter 34.) The value of any one *in terms of the other* rises as its relative quantity and efficiency fall and falls as its quantity and efficiency rise. But the absolute amount of goods obtained, the income obtained by any one, may and does rise with its quantity and efficiency and *vice versa.* Labor and natural materials are complementary agents, and the more abundant and accessible

[2] Among many examples note: ch. 7, secs. 9, 10; ch. 13, sec. 4; ch. 15, sec. 11; ch. 18, sec. 10; ch. 27, sec. 13; ch. 28, sec. 10; ch. 30, sec. 3.

the natural stores of materials, the larger the whole product of industry and the larger also the share of the price that is attributed to the labor. Real wages must vary (other things equal) with available supplies of elementary materials, rising when they become relatively more abundant, and falling with their exhaustion or relative diminution. This is illustrated broadly by the high real incomes of the common laborer in new countries, despite some other adverse conditions, and by the lower incomes in countries poor in natural resources. As those natural resources that are exhaustible, as lumber, coal, and metal ores, grow less, their money price rises. That makes the purchasing power of a day's labor less in exchange not only for those raw materials, but for everything which those materials are indirectly helping to create. It is possible to counteract this effect in part or wholly, temporarily or permanently, by substitutions and by other improvements, and by the discovery of new resources beneath the surface of the earth.

Even when population is stationary or decreasing, an absolute decrease of the supplies of many of the principal natural materials is certain to take place and, in so far, real wages may be reduced. A decreasing food supply, on the contrary, can hardly occur with a stationary or slowly increasing population such as results from effective volitional control.

Change in the artificial agents for shaping and moving things is the second great objective cause of changes in wages. It has been shown (Chapters 12 and 36) how the utilization of wealth is affected by scarcity and abundance of agents, and how saving increases the bounty of agents, improves the methods of production, and benefits the community as a whole, including those who have had no part in the saving (Chapters 24 and 38). Thus from several sides it has been seen how the necessary influence of a decaying equipment of tools must force laborers to lower, less effective, margins in the existing stocks of tools, and on the other hand how the relative increases of those agents, and the growth of science and invention, tend toward the raising of production and of the

proportion going as wages. Other things being equal, real wages vary with the agencies for shaping and moving things, rising when they become relatively more abundant and effective, and falling if they decline. Except as affected by the increasing scarcity of some elemental materials, the reasonable prospect is that tools and machinery will steadily be multiplied in number and improved in efficiency. This is a basis for optimistic prophecy.[3]

§ 6. **Labor and its environment.** Decreasing and increasing returns are cases of changing proportionality, involving social, rather than individual adjustment; not the adjustment of enterpriser's money cost to prices, but of the whole labor supply in relation to the employment afforded by its environment. The individual employer thinks of the supply of labor as consisting of men seeking employment in his special industry. In this view it is the demand of the employers that apportions the workers among the various occupations, and seems to determine wages. The social view of the opportunity for labor, however, looks at the whole field. The opportunity for labor is then seen to be represented ultimately not by human employers, but by resources and agents which labor can use. The rich acre, the tool, the machine, all material wealth needing the human touch to utilize it, represent opportunity for labor in this sense. The employers' demand for labor, therefore, is but a reflection of the opportunities embodied in resources. A million men are a great or a small population according as they occupy a little island or a large continent, according as they are equipped with a small or a large supply of agents.

[3] The wage-fund doctrine of wages once held a central place in economic discussion. It was that wages were determined by the relation of the number of laborers to the capital. "Capital" was taken in the narrow sense of a special fund set aside (it was never quite clear how) by the employers for the payment of wages. The element of truth in the doctrine was the recognition, somewhat dim, that wages are favorably affected by the efficiency of the whole economic environment in which labor works.

§ 7. **Aspects of wealth.** Wealth is the general term for those things which are felt or seen to be related to the gratification of desires. This definition is wider or narrower according to the senses in which the various words are taken. What is included in "things"? How deeply are they felt and how far-sightedly are they seen to be related? How immediate is the gratification? Individual wealth is usually taken to mean the valuable things the individual owns. Some would include "internal goods," such abstract qualities as honesty and cheerfulness; others would include not abstract qualities but men themselves with all their capacities of body and mind; the free man owning himself and his powers to serve his own desires, the slave being owned. More frequently, and properly, the term individual wealth is limited to valuable agents objective to men, not including free men. There is much popular usage in favor of including documentary evidences of ownership such as notes, mortgages, stocks, and other credit instruments, by so doing making private wealth (tho not always consistently) synonymous with capital in our definition. There is good reason to keep the term wealth for the concrete things while using capital as the value expression of business power embodied in those things. Thus, the factory is wealth, the economic basis for the capital represented by stocks and bonds; the farm is wealth, the economic basis of the mortgage and of the owner's residual claim to the unmortgaged capital value.

Social wealth is a broader term and includes all the weal-bringing environment of the nation. It is more than the sum of concrete individual wealth (factories, farms, etc., of course all conflicting claims being canceled); it includes the valuable things held in governmental possession, such as parks, forests, public buildings, libraries, bridges, highways, and public-owned wealth, etc., and also all the natural advantages of climate, rivers, harbors, lakes, and oceans. The better and more beautiful these advantages, the less may be the need of individual wealth; one nation with natural waterways may

be truly wealthier than another with canals costing millions of dollars and owned by corporations; and a nation with abundant cheap lands of low price is more happily situated than one with high-priced lands that yield great private incomes to the owners.

§ 8. **Welfare.** Welfare, in an immediate or narrow sense, is the same as gratification of the moment; in a broader and truer sense it is the abiding condition of well-being. We have here a distinction very much like that often made between pleasure and happiness. If only the present moment is thought of, welfare is the absence of pain, and the presence of pleasurable feeling; but if a longer period in a man's life or his entire lifetime is considered, it is seen that many things that afford a momentary gratification do not minister to his ultimate, or abiding, welfare. The difference is illustrated by the thoughtlessness and impulsiveness of a child or savage as contrasted with the more rational life of those with foresight and patience.

Now it is evident that a large part of the value of individual wealth rests on the basis of foolish and shortsighted choice. But whether tobacco or alcohol or morphine minister to the abiding welfare of the consumers is not the question in explaining the value of these things.[4] Here again it is seen how poor an index the value of individual wealth is to the permanent welfare of men and society.

In studying the question of social prosperity we must rise to the standpoint of the social philosopher and consider the more abiding effects of wealth. Desires may be developed and made rational, and the permanent prosperity of a community depends on this result. Any species of animals that continued regularly to enjoy that which weakens the health and strength would become extinct. Any society or individual that continues to seek its pleasures in ways that do not, on the average, minister to permanent welfare, sinks in the struggle of life and gives way to those men and nations that have a

[4] See also ch. 19, note on value versus utility of labor.

sounder and healthier adjustment of choice and welfare. We touch here, therefore, on the edge of the great problems of morals, and while we must recognize the contrast that often exists in the life of any particular man between his "pleasures" and his health and happiness, we see that there is a reason why, on the whole, and in the long run, these two can not remain far apart. The old proverbs, "Be virtuous and you will be happy," "Honesty is the best policy," and "Virtue is its own reward," have a sound basis in the age-long experience of the world. Cynics or jesters may easily disprove these truths in a multitude of particular cases.

§ 9. **The paradox of value in practice.** A necessary condition of value is scarcity. The business incomes of individuals depend on the price of the agents and uses they control. It appears in the paradox of value (Chapter 4, section 11) that up to a certain point the total value increases with the number of units offered in a market, and beyond that point it decreases. In the period of increasing total price (tho declining unit price) any one who owned the whole supply would gain by abundance and his interest would be in harmony with the interests of the buyers of his goods; beyond that point he would gain by greater scarcity. This individual gain sometimes may lie in social want rather than in social wealth. Broadly speaking, so long as value is on the ascending curve and income grows with abundance of goods, the individual interest is bound up with the social interest. So soon as value is on the descending curve and private income grows with social need, the individual interest is at conflict with the social interest, and a problem of social control is presented. Fortunately, in most cases the individual is concerned only with the ascending scale of total value and can increase his private income only by striving for abundance, increasing the number of units he has to offer. A social problem is presented wherever individuals or corporations control such a large proportion of the whole supply at a particular time and

place that they are tempted to increase their private incomes by artificially enhancing scarcity.

In other cases scarcity grows inevitably, as in the exhaustion of natural deposits or the relative decrease of favored building sites for commerce and of tillable land for food when population grows rapidly. Each individual controls such a small portion of the supply that he gains only by striving for abundance (planting new forests, discovering and developing new mines, clearing, draining, irrigating, and fertilizing more fields); but with growing scarcity of the whole supply, price per unit rises. Where supply is absolutely falling off (exhaustion of natural stores of timber, coal, and metals) this rising price per unit partly, wholly, or more than, compensates the owners for the decreasing quantity; where supply is only relatively declining (same supply at a higher price) each owner gains and the whole group of owners gain by the scarcity, without themselves helping to bring about the change. Thus again it is seen that value is not identical, indeed may be in contrast with utility. Individual incomes depend primarily upon value, and therefore individual gain may be associated in many cases with scarcity and not with abundance.

§ 10. **Conflict of individual and general interests.** The social welfare has no reality apart from the abiding happiness of individuals and progress toward a higher, nobler form of social life. The individual members of society are guided mainly in their business activity by value, as that determines their incomes, and the value of the services rendered is a very inaccurate index either of the welfare of the individual consumer or of the social group. Both labor-claims and capital-claims on income reflect values; they do not always reflect the true welfare of individuals or of society. Labor and wealth sometimes are applied to nerve-destroying and life-destroying pleasures, because the panderer to vices can get a larger income in that way than in any other. Gamblers provide means for the indulgence of a common weakness that gives a pleasurable excitement but that undermines the founda-

tions of social prosperity. Able lawyers render highly paid services to enable individual criminals to escape the penalty of the law or wealthy corporations to destroy competitors, establish illegal monopoly, and secure anti-social gains. Employers have profited through defeating, with superior legal talent and powers of endurance, the claims of workmen. Manual laborers often shirk work when not under the master's eye and draw their wages for dishonest service. The primary purpose of most men in industry is to acquire income, and they leave the purchaser to look after his own welfare. Fortunately, however, in many cases acquisition of income is conditioned on production of welfare, and some worthy standards of business honor are found in every class of society.

In this regard what is true of income from labor-services is true of capital. Capital is the saleable value-expression of expected incomes, no matter what the source of the incomes may be, whether rentals of vice, gains of monopoly, mendacious advertising, or the growing scarcity of natural agents. To identify growth of capital with national prosperity is fallacious. Capital is a private business concept, and tho in many cases it is the present worth of real productive agents, in others it reflects the claim of one individual against another rather than a claim upon objective goods, relative scarcity rather than abundance, a summation of value rather than of welfare.

§ 11. **Business economy and social economy.** Not without reason it has been made a reproach to economic writers that they often have confounded business incomes (and especially those of a limited, influential, class in society) with general social welfare, and have identified individual acquisition with social production. Business economy has been mistaken for true political economy, commercial profits for social welfare.

The right understanding of the nature of value and of capital makes possible a clearer distinction than before between business economy and social economy. Men can not to-day,

in view of the truths set forth above, cherish the error that "whatever is, is right" in the distribution of incomes. We must recognize the fact that in all times and countries and still to-day there is in public and private business more or less favoritism, bribery, monopoly, and dishonesty, which give to some men more than the economic law of value would explain or warrant. We must recognize further that the law of value itself is not necessarily the law of justice, that the incomes resulting from values in the world as it is do not always meet an ethical test. The problem of the social control of industry is largely that of determining when incomes that accrue to individuals are in harmony with, and when they are adverse, to the general weal. A number of these questions will be considered and an attempt will be made to answer them in accord with fundamental economic principles, in a later volume on "Modern Economic Problems."

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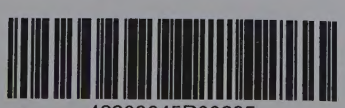
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